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THE  
ECLECTIC  
QUESTION BOOK.

*Designed to Assist Pupils in Reviewing their Studies; also, Teachers in  
Examining their Classes, and Normal Schools and Teachers'  
Institutes in Class and Drill Exercises.*

BY

ALEXANDER DUNCAN, A. M.  
*Author of The "Examiner, or Teacher's Aid."*



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## PREFACE.

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HAVING been an examiner for many years, the author has watched, with the deepest interest, the results developed in the examination of hundreds, nay thousands, of candidates for the Teacher's profession. While some of them have been gratifying, most have been sufficiently surprising and painful. The facts are these:

1st. A considerable number of those applying, from year to year, are rejected, because they *totally fail* to sustain the requisite examination.

2d. A larger number *barely* pass the ordeal, and receive certificates scarcely less discreditable than would be rejection itself.

3d. Quite 25 per cent of the remainder pass the required examination about half as well as they ought, and receive certificates accordingly.

4th. Not more than 10 per cent, hardly more than 5 per cent, of the whole secure the highest testimonials of scholarship, which the law puts fairly within the reach of all.

Convinced that there is no necessity for this state of things, and that he who shall point out a reasonable method of avoiding it will be doing an acceptable service, the author has prepared this work, earnestly hoping that it will contribute, in some degree, at least, to a higher and more thorough grade of qualification on the part of candidates for the important and responsible position of the Teacher.

Another want I have sought to supply, viz.: *a convenient manual for reviewing the common branches in schools.*

Reviewing, as ordinarily practiced, is irksome and almost profitless. It is going over the same ground very much in the same way, but without the stimulus of novelty. Rather let the teacher insist on thoroughness from the very first, and at every step; and then, at the proper time, supply his pupils with the means and method of testing their actual attainments, and supplying their deficiencies. It is hoped that the QUESTION BOOK will be found peculiarly adapted to this end.

Kindred to this might be mentioned its fitness as an *auxiliary* work, in the conduct of Teachers' Institutes and Normal Schools.

THE AUTHOR.

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## SUGGESTIONS TO CANDIDATES.

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REMEMBER that the object of the examination which the law requires you to pass, before you can be legally authorized to teach in any public school, is not to puzzle or harass you in any manner whatever. It is simply to ascertain whether you have such an acquaintance with the branches specified as shall qualify you to *teach* them. You see, therefore, on what your success as a candidate must depend.

You may and ought to be fully qualified to sustain a satisfactory examination. The books which treat of the branches specified lie within your reach. You profess to have studied them. You understand, therefore, where the requisite knowledge is to be found. Have you mastered it? If called upon to point out, distinctly and accurately, the difference between a vowel and a consonant, between a palatal and a lingual, between prose and poetry, can you do it?

Examiners will wish to know whether you can teach the various vowel and consonant sounds; and they will want you to *show* this, by actually making and illustrating them. Can you do it? In a similar manner, they will test your knowledge of Geography. They may ask you why the Polar Circles and the Tropics are located where they are, rather than elsewhere; or, in what direction Iceland is from the North Pole, Australia from the South Pole, etc. Are you fully prepared to answer these, and other questions that may be propounded to you on this topic? Of course, you will expect to be subjected to a similar scrutiny in relation to English Grammar and Arithmetic.

Hence, it is urged that you examine yourselves, and so familiarize your minds with each topic, that neither the questions here named, nor any others of a proper character, may find you unprepared. You can do this,—indeed, you can hardly avoid doing it,—if you pursue the course indicated in the QUESTION BOOK.

There are presented in the following pages, not *the* questions that will meet you in the examination-room, but rather such as will test

your knowledge of the several branches upon which you must be examined; and these are accompanied by such references as will enable you to supply, by proper study, your deficiencies.

In using this work, in many cases, where there is more than ordinary scholarship or experience, it may answer merely to read the questions in the order in which they are presented, answering them mentally, as you proceed, being sure, however, not to pass *one* unanswered. When you come to a question calling for information which you can not readily furnish, avail yourselves of the *reference* and *so study* it as to enable you to answer, not only that question, but any similar one that may be submitted to you.

But a surer, and therefore a better, method will be to supply yourselves with paper, pencil, and the requisite authorities, and resolutely determine to answer, *in writing*, every question found in the QUESTION BOOK. This is decidedly preferable, especially for two reasons:

1st. It will serve to render your knowledge definite, fixed, and satisfactory, and therefore always available.

2d. Because written examinations are fast becoming more and more common, and will doubtless soon be generally adopted.

Candidates, therefore, should accustom themselves to this mode of answering questions on all topics, and should study to do this with clearness, neatness and dispatch. With such a preparation, you need not fear to enter any examination-room.

During the time of your examination, observe the following directions:

1st. Have your mind fixed exclusively on the business before you.

2d. In no case resort to books or to your fellow-candidates for aid.

3d. In your reading exercises, be deliberate and natural.

4th. Be careful of your spelling, penmanship, punctuation, and capitals.

5th. Do not delay too long on questions you can not answer, if, unfortunately, you find such; rather pass them, leaving a corresponding blank in your manuscript.

6th. Cheerfully comply with all rules and regulations established by the Examiners.

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# THE ECLECTIC QUESTION BOOK.

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## ORTHOGRAPHY.

The references in the questions on Orthography are to HARVEY'S ENGLISH GRAMMAR, Revised Edition.

1. What is a word? P. 7, Sec. 1.\*
2. What is language? P. 7, Sec. 2.
3. In what two ways may it be expressed? P. 7, Sec. 2.
4. Of what does grammar treat? P. 7, Sec. 3.
5. What does English grammar teach? P. 7, Sec. 4.
6. Into what parts is English grammar divided? P. 7, Sec. 5.
7. Define each of these four parts. P. 7, Sec. 6-9.
8. Of what does orthography treat? P. 8, Sec. 1.
9. What is an elementary sound? P. 8, Sec. 2.
10. How would you define a letter? P. 8, Sec. 3.
11. Into what classes are letters divided? P. 8, Sec. 3;  
*small print.*

---

\*The following contractions are frequently used in this work: Sp. for Spelling-Book; Rr. for Reader; Gr. for Grammar; P. for Page; Art. for Article; L. for Lesson; Par. for Paragraph; C. for Column; Pt. for Part; Ex. for Example; Exc. for Exception; R. for Rule; N. for Note; Rem. for Remark; and Dem. for Demonstration; Prin. for Principle.



12. What do these divisions represent? P. 8, Sec. 3; *small print*.

13. What is a syllable, and how may it be represented? P. 8, Sec. 4.

14. How do words and syllables differ? P. 8, Sec. 5.

### ELEMENTARY SOUNDS.

1. How many elementary sounds are there in the English language? P. 8, Sec. 1.

2. Into what classes are these sounds divided? P. 8, Sec. 2.

3. Describe vocals, subvocals, and aspirates. P. 9, Sec. 3-5.

4. Give a word to illustrate each of the elementary sounds of the *vocals*. P. 9. *See Table*.

5. Into what classes may the subvocals and aspirates be divided? P. 9, Sec. 1; and P. 10, Sec. 2.

6. What letters are called *liquids*, and why? P. 10, Rem.

### LETTERS.

1. How do the letters of the English alphabet and the sounds they represent compare, and what is the number of each? P. 11, first Par.

### DIPHTHONGS, DIGRAPHS AND TRIGRAPHS.

1. Define a diphthong and give two examples. P. 11, Sec. 1 and Rem.

2. Define a digraph and trigraph, and give five examples of each. P. 11, Sec. 2 and 3, and Rem.

3. What are double consonants? P. 12, Art. 8.

4. *What are substitutes?* P. 12, Art. 9.

5. What substitutes have *a, e, i, o* and *u*? P. 12, Art. 9.

6. Give the substitutes of *f, j, k, s, t, v, w, x, y, z, ch, sh, zh, ng*. P. 13, Art 9.

7. Write the word *Alphabet*, first in Roman, second in Italic, third in script, and fourth in old English letters. P. 13, Sec. 1.

8. How are letters used? P. 13, Sec. 3 and Rem.

## CAPITAL LETTERS.

1. When are capitals properly used? Pp. 14-17.

2. When are they improperly used? P. 17, Sec. 1-3.

3. Correct the following where necessary, viz.:

(1.) The sun is the center of our system. man has a physical nature. the winter has been severe.

(2.) The city paid the past year:

for cleaning streets . . . . . \$10,000

for making sewers . . . . . 5,000

(3.) *Resolved*, that we are a free people. Be it enacted by the general assembly, etc., that section third be repealed.

(4.) John said i will come. I answered to-morrow.

(5.) let the sweet hope that thou art mine,  
my life and death attend;  
thy presence through my journey shine,  
and crown my journey's end.

(6.) Sarah and samuel went to the city. congress and general assembly met on the same day.

(7.) George, james, emma, cincinnati, april, February, Thursday, general grant, I. j. smith.

(8.) president washington. secretary Evarts. elder Wise.

(9.) When music, heavenly maid, was young,  
while yet in early greece she sung,  
The passions oft to hear her shell,  
Throng'd around her magic cell.

(10.) The central park. The St. John's river. The rocky mountains.

(11.) The lord our God is eternal. Remember thy creator. divine love and wisdom. The ways of providence are wise.

(12.) I know that my redeemer liveth. I am the Way, the truth and the life. The word was made flesh.

(13.) Those are japanese, the others are turks, still others are indians.

(14.) The american mission. the danish government. the johnsonian style.

(15.) The tariff was discussed, the pension bill passed, the secretary of the treasury was appointed.

(16.) The emancipation proclamation. The whiskey insurrection. The art of teaching. Pp. 18 and 19.

4. When should italics and small capitals be used? Pp. 19 and 20, Sec. I-VII, and Rem. 1-3.

### SYLLABLES.

1. Of what may a syllable be composed? P. 20, Sec. 1-3.

2. Give two examples of each. P. 20, Sec. 1-3.

3. What is an essential part of a syllable? P. 20, Sec. 2.

4. Define synthesis and analysis. P. 20. Sec. 3 and 4.

5. Analyze fly, warm, value, wax, home and zinc. Pp. 20 and 21, Models I-VIII.

### WORDS.

1. Of what may words consist? P. 22, Sec. 1.

2. Define a monosyllable, a dissyllable, a trisyllable and a polysyllable. P. 22, Sec. 1. *Small print.*

3. Define accent, and describe its use. P. 22, Sec. 2-4.

4. Analyze, divide into their syllables, and mark the accent of each of these words; viz., Lead, famous, endeavor, candidly, gratuitous, incomprehensible, and indefensibleness. P. 22, Models.

5. How are syllables to be treated in writing at the ends of lines? P. 23, Note.

6. Change the accent of the following words, and give the definition of each both before and after the change, viz.: In'sult, fer'ment, reb'el, rec'ord, con'jure, en'trance, in'crease and in'cense. See Webster's Dictionary.

7. Define primitive, derivative, and compound words, and give three examples of each. P. 23, Classes 1-4, and Note.

8. Define prefixes, suffixes, and affixes. P. 24, Sec. 5-7.

For a more detailed description of Orthography, see MCGUFFEY'S ECLECTIC SPELLING BOOK, Revised Edition, on almost every page of which valuable instruction is conveyed.

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## ENGLISH GRAMMAR.

The references in the questions on English Grammar are to HARVEY'S ENGLISH GRAMMAR, Revised Edition.

### ETYMOLOGY.

1. Of what does etymology treat? P. 25, Sec. 1.
2. Into how many classes are words divided in respect to their use? P. 25, Sec. 2.
3. What are these classes called, and why so called? Pp. 25-29.
4. Give five examples of each of the parts of speech. Pp. 25-29.

### NOUNS.

1. Into what two classes are *nouns* divided, and why are they so divided? Pp. 30 and 31, Sec. 1-3, and Rem. 1-3.
2. When two or more words form but one name, how are they to be regarded? P. 31, Rem. 4.
3. Into what classes are common nouns divided? P. 31, Rem. 5.

4. Define class, abstract, collective, and participial nouns, and give three examples of each. P. 31, Rem. 5.
5. What are substantive nouns? P. 31, Rem. 6.
6. Define mass nouns. P. 31, Rem. 7.

### PROPERTIES.

1. Name the properties of nouns. P. 31.
2. Define gender, and name the four in common use, giving three examples of each. Pp. 31 and 32.
3. When inanimate objects are personified, what gender is ascribed to them? P. 32, Rem. 1.
4. What other exceptions are there to the rules given above? P. 32, Rem. 2-4.
5. In what ways are the masculine and feminine genders distinguished? Pp. 32 and 33, Sec. 7, Par. 1-3.

### PERSON.

1. Define person as a property of the noun. P. 33, Sec. 1.
2. How many and what persons are there, and what does each denote? Illustrate by examples. P. 33, Sec. 2-5.
3. What exceptions are there? P. 33, Sec. 5, Rem. 1 and 2.

### NUMBER.

1. Define number and its use as a property of the noun. P. 34, Sec. 1.
2. What numbers are used, and on what do they depend? P. 34, Sec. 2-4.
3. What rules can you give for the formation of the plural of nouns? Pp. 34 and 35, Sec. 1-15.
4. What exceptions are there to these rules? Pp. 35 and 36. Art. 28, Sec. 1-5.

**CASE.**

1. Define case and describe their number, names and uses. P. 36, Art. 29, and Rem.
2. For what is the nominative case used? P. 36, Art. 30.
3. What does the possessive case denote? P. 37, Sec. 1.
4. How are the possessive case singular and the possessive case plural formed? P. 37, Sec. 2 and 3.
5. What exceptions to these rules are there? Pp. 37 and 38, Sec. 3, Rem. 1-6.

**OBJECTIVE CASE.**

1. Define the objective case and explain its use. P. 38, Art. 32.
2. Define the absolute case and its use. Pp. 38 and 39, Art. 33, and Rem. 1-5.
3. When are nouns in apposition? P. 39, Art. 34.
4. What do you understand by the declension of a noun? P. 39, Art. 35.
5. Define parsing. P. 39, Art. 36.
6. Write and parse five sentences, the first of which shall contain nouns in the singular and plural number; the second, nouns in the masculine and feminine genders; the third, nouns in the nominative and possessive cases; the fourth, nouns in the objective and absolute cases; and the fifth, nouns in the several persons. Pp. 40, 41 and 42. Models and Exercises.

**ADJECTIVES.**

1. Define an adjective. P. 44, Art. 41.
2. Into what classes may adjectives be divided? P. 44, Art. 42.
3. What are descriptive adjectives? P. 44, Sec. 1 and Rem. 1-4.
4. Describe definitive adjectives, and tell into what three classes they are divided. P. 45, Art. 44, Sec. 1 and 2.

**ARTICLES.**

1. What words are articles and how would you describe them? P. 45, Sec. 1 and 2.

2. Describe pronominal adjectives, their classes and uses. P. 46, Art. 46, Sec. 1 and 2.

3. What are demonstratives, and for what used? Pp. 46 and 47, Art. 47, Sec. 1-7.

4. What are distributives, and for what purpose used? P. 47, Art. 48, Sec. 1-4.

5. What are indefinites and their uses? Pp. 47 and 48, Art. 49, Sec. 1-17.

6. What are numeral adjectives? How classified and used? P. 49, Art. 50, Sec. 1-5.

**COMPARISON OF ADJECTIVES.**

1. Define comparison. P. 50, Art. 51, Sec. 1.

2. How many and what degrees of comparison are there? P. 50, Sec. 2.

3. How are these degrees used? P. 50, Sec. 3-5.

4. What other forms of comparison are used? P. 51, Rem. 1-3.

5. How are the degrees of comparison formed? P. 51, Sec. 1, Par. 1 and 2.

6. How in descending comparison? P. 51, Sec. 2.

7. What other methods are in use? P. 51, Sec. 3, and Rem. 1 and 2.

8. What is your model for parsing adjectives? P. 52, Art. 53 and 54.

9. What are the most important cautions against the wrong use of articles and adjectives? Pp. 54 and 55.

**PRONOUNS.**

1. Define a pronoun and its antecedent. P. 57, Sec. 1-4.

2. What properties have pronouns? Pp. 57 and 58, Sec. 1 and 2.
3. Into what classes are pronouns divided? P. 58, Sec. 1-3.
4. What are the personal pronouns, and how are they declined? Pp. 58 and 59.
5. How would you explain the common usage of thou, thy, thine, thyself, we, you, it, and the compound personal pronouns? Pp. 59 and 60, Sec. 1-9.
6. What is your order for parsing pronouns? Pp. 61 and 62.
7. What are possessive pronouns, for what most commonly used, and how parsed? Pp. 63 and 64.

### RELATIVE PRONOUNS.

1. What are relative pronouns? How classified, declined and parsed? Pp. 64-68.
2. What are interrogative pronouns, and how parsed? Pp. 69-71.
3. What cautions are most needed in the use of the pronouns? Pp. 72 and 73.

### THE VERB.

1. Define a verb. P. 74.
  2. Into what classes are verbs divided? P. 74, Sec. 1 and 2.
  3. Explain each of these classes. Pp. 74 and 75.
  4. Which verbs are regular and which irregular? P. 76, Sec. 1-3.
  5. What properties have verbs? P. 76.
  6. Explain that property called voice. Pp. 76 and 77.
- Q. B.—2.



**THE PARTICIPLE.**

1. Define a participle. P. 78.
2. How many participles are there? Why so called, and how are they used and parsed? Pp. 78-82.
3. What are auxiliary verbs, and why so called? Pp. 82 and 83.

**MODES.**

1. What is mode? What their number and names, and why so called? Pp. 83-87.

**TENSES.**

1. Define tense. Give the number and names of the tenses, and explain their uses. Pp. 88-92.
2. What five forms have verbs, and what does each form represent? Pp. 92 and 93.
3. What are person and number in their application to verbs? Pp. 93 and 94.
4. What are unipersonal verbs? P. 94.

**CONJUGATIONS.**

1. What is meant by the conjugation of a verb? P. 95, Sec. 1.
2. What four forms of conjugation are in use? P. 95, Sec. 2.
3. What are the principal parts of a verb? P. 95, Sec. 3.
4. What is the synopsis of a verb? P. 95, Sec. 4.
5. Conjugate the verb *to be* in all its modes and tenses. Pp. 95-98.
6. Also the verb *to give* in the same way. Pp. 98-101.
7. How are the negative forms of verbs conjugated? P. 105.

8. What is the distinction between regular and irregular verbs? P. 106. Give the principal parts of six irregular verbs. Pp. 106-109.

9. Define defective and redundant verbs. Pp. 109 and 110.

10. Give the proper order and model for parsing verbs. Pp. 110-112.

11. What cautions would you give against the wrong use of verbs in speaking or writing? Pp. 113-115.

**ADVERBS.**

1. Define an adverb. P. 116.

2. Name the classes into which adverbs are divided, and give five examples of each class. Pp. 116 and 117.

3. What is an adverbial phrase? P. 117, Sec. 9.

4. How are adverbs compared? P. 118, Sec. 1-3.

5. How should adverbs be parsed? P. 118-120.

6. What cautions would you give in the use of adverbs? Pp. 120 and 121.

**PREPOSITIONS.**

1. Define a preposition and explain its use. P. 122.

2. How many prepositions can you give? Pp. 123 and 124.

3. Give the order and model for parsing them. P. 125. What caution is necessary in their use? Pp. 126 and 127.

4. What directions can you give as to their proper use? Pp. 128 and 129.

**CONJUNCTIONS.**

1. Give the definition, classification, and method of parsing conjunctions. Pp. 128-130.

## INTERJECTIONS.

1. Define and give the method of parsing interjections. Pp. 132 and 133.

## SYNTAX.

1. Define respectively: Syntax; a sentence; a proposition; a principal and a subordinate proposition; a phrase; a discourse; a paragraph; an element; analysis; and synthesis. Pp. 143 and 144.
2. How are sentences classified with respect to use? P. 144, Sec. 1.
3. Give three of each class. Pp. 144 and 145.
4. How are sentences classified with respect to form? P. 145, Sec. 1.
5. Give five examples of each class. Pp. 145 and 146.

## ELEMENTS.

1. What are the principal elements of a proposition? P. 148, Sec. 1-3.
2. Of what may the subject and predicate of a proposition respectively consist? P. 149.
3. What is the copula? P. 149.
4. Define "Arrangement of Elements." Pp. 151 and 152.
5. What are subordinate and objective elements? Pp. 153 and 154.
6. Give your mode of analysis and synthesis. Pp. 154-156.
7. Describe adjective, adverbial and attendant elements, and show how they should be disposed of in analysis and synthesis. 156-161.
8. Into what classes may elements be divided? Pp. 161 and 162.

9. How are phrases used in analysis as elements? Pp. 162-164.
10. Describe the different kinds of elements. Pp. 168-174.
11. How are clauses classified? Pp. 175-177.
12. How are sentences often contracted? Pp. 178-183.

### ANALYSIS.

1. What directions and models would you give for analysis? Pp. 184-190.

### RULES OF SYNTAX.

1. Explain and apply Rule I. Pp. 192 and 193.
2. Give the rule for parsing the predicate nominative, and correct if necessary the following: It was her and him who you saw. P. 193.
3. Give the remaining rules in their order, and one sentence illustrating the use of each. Pp. 190 and 222.
4. Name the different parts of speech for which *as*, *but*, *enough*, *except*, *like*, and *more* are used, and give a sentence illustrating each. Pp. 222-228.

### FIGURES OF LANGUAGE.

1. How are figures of language classified? Art. 237, Sec. 1-4.
2. Define apheresis, syncope, tmesis, dieresis, ellipsis, pleonasm, simile, metaphor, allegory, synecdoche, epigram, hyperbole, climax, apostrophe, irony and litotes. Pp. 231-236.

### PUNCTUATION.

1. What is punctuation? Art. 241, Sec. 1.
2. What are the principal marks used in punctuation? Art. 241, Sec. 2.

3. What are the rules for their use in punctuating?  
Art. 242-250.

4. Give examples illustrating this. Art. 242-250.

5. What other marks are used in writing? Art. 251.

### PROSODY.

1. Define prosody, and describe the different kinds of poetic feet, and give examples illustrating the proper use of each. Art. 252-262.

2. Define poetic license and scanning. Art. 262, 263.

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### READING.

The threefold argument of the ancient orator in favor of *action* as the fundamental qualification for successful public speaking is quite applicable to the art of teaching *reading*, only substituting *example* for *action*. Without it the teacher can do nothing successfully in this important part of his duty; with it, he can work wonders. As well attempt to make first class singers by merely inculcating the *theory* of vocal music, as *good readers* by expounding the principles of elocution, unless constantly illustrated and applied by the teacher *in practice with the class*.

The references which follow are to MCGUFFEY'S SIXTH ECLECTIC READER, Revised Edition.

1. What ~~is~~ articulation? P. 11.

2. How may a good articulation be acquired? P. 11.

3. What is an elementary sound? P. 12.

4. How are the elementary sounds of the English language divided? P. 12.

5. How should vocals be taught? P. 12.

6. In what respect do the short and long sounds differ?  
P. 13, Rem. I.

7. By what combinations of letters are vocal sounds often represented? P. 13, Rem. II.

8. What difference should be observed in articulating the long and short vocals? P. 13, Rem. III.

9. What words are best adapted for practice in the use of *subvocals* and *aspirates*? P. 13.

10. How would you practice these? P. 14, Rem.
11. Define substitutes and their use. Pp. 14 and 15.
12. What are the most common faults observed in articulation? Pp. 15-18, Sec. 1-5.
13. Give three examples illustrating each of these faults. Pp. 15-18, Sec. 1-5.
14. Define inflection. P. 18.
15. How many and what kinds of inflection are there? Pp. 18-20.
16. Describe their marks and uses. Pp. 18-20.
17. When is the falling inflection required? P. 21, R. i.
18. What exception is there to this? P. 21, Exc.
19. What inflection does the language of emphasis generally require? P. 22, R. ii.
20. Which inflection do interrogative sentences which can not be answered by *yes* or *no*, require? P. 22, R. iii. Is there any exception to this? P. 22, Exc.
21. When the sense is dependent or incomplete what inflection is required? P. 23, R. iv.
22. What inflection is required in negative sentences? P. 24, R. v.
23. What effect may emphasis have on this rule? P. 24, Exc. 1 and 2.
24. When interrogative sentences and members of sentences can be answered by *yes* or *no*, what inflection is required? P. 25, R. vi.
25. What exception to this rule? P. 25, Exc.
26. Interrogative exclamations require what inflection? P. 25, R. vii.
27. What words and members of a sentence require opposite inflections? P. 26, R. viii.
28. Define series in its application to elocution. P. 28.
29. Define a commencing and a concluding series. P. 28.
30. All the members of a commencing series, when not emphatic, generally require what inflection? P. 28, R. ix.
31. What exception is there to this rule? P. 29, Exc.

32. When all the members of a concluding series are not at all emphatic, what inflection is required? P. 29, R. x.

33. Name the exceptions to this rule. Pp. 29, Exc. 1, and 30, Exc. 2.

34. How should a parenthesis be read, and with what inflections? P. 30, R. xi.

35. For what is the circumflex used? P. 31, R. xii.

36. What is the monotone and for what chiefly used? P. 32, R. xiii.

### ACCENT AND EMPHASIS.

1. Define accent. P. 38.

2. What determines the syllable upon which the accent should fall? P. 33.

3. When can reasons be assigned for common usage in relation to the accent of some words? P. 33.

4. What is the secondary accent, and how is it marked? P. 34.

5. Define emphasis; show how made and applied. P. 34.

6. How does it differ from accent? P. 34.

7. What is its influence on accent? P. 34.

8. How are emphatic words often distinguished in writing or printing them? P. 34.

9. What is absolute emphasis, and when used? P. 35.

10. Define relative emphasis. P. 35.

11. When words which are the same in part of their formation are contrasted, how is emphasis expressed? P. 37.

12. What may be the influence of emphasis on inflection? P. 37.

13. When you desire to give a phrase great force, what is it proper to do? P. 38.

14. What is the effect of a short pause made before or after, and sometimes both before and after, an emphatic word or phrase? P. 39.

15. What would you teach that the inflections should be in reading verse? P. 39.

16. What is the great difficulty to be avoided in reading verse? P. 40.

17. What is the rule to be observed in regard to accent and emphasis in reading, or reciting verse? P. 41.

18. When the melody or music conflicts with correct accent or emphasis, which must prevail? P. 41.

19. What are poetic pauses, and where do they occur? P. 43.

20. What fault is to be avoided in making poetic pauses? P. 43.

21. What is simile in poetry, and how should it be read? Pp. 44 and 45.

22. What is the natural pitch of the voice? P. 46.

23. What do you understand by the compass of the voice? P. 46.

24. How would you teach your pupils to strengthen and enlarge the compass of their voices? P. 46.

25. When is a high pitch required in reading? P. 46.

26. How would you cultivate the medium pitch? P. 47, Note.

27. When is a low pitch required? Pp. 47 and 48.

28. Define quantity as applicable to reading and speaking. P. 49. How is it usually classified? P. 49.

29. What directions would you give for practice in long quantity? P. 49.

30. What is the difference between rotundity and loudness of sound? P. 49, Rem.

31. Describe medium and short quantity. Pp. 50 and 51.

32. What kinds of sentiment and style does each require? P. 51.

33. What is movement in relation to reading and speaking? P. 51.

34. How is movement classified, and what directions would you give for practice in each? Pp. 51 and 52.



35. Describe quality in distinction from quantity in elocution. Pp. 53 and 54.

36. What directions would you give in relation to gesture? Pp. 55-57.

37. When should the training of youth in elocution begin? P. 57.

38. What is the first requisite for good speaking? P. 57.

39. What proportion of time in school should be given in teaching reading? P. 58.

40. How may perfection in this art be acquired? P. 59.

41. What is its comparative importance? P. 59.

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## ARITHMETIC.

The following references are all to RAY'S NEW HIGHER ARITHMETIC.

### INTRODUCTION.

1. What is a definition? Art. 1.

2. Define quantity. Art. 2.

3. What do you understand by science? Art. 3.

4. What are the primary truths of science called? Art. 4.

5. Define art. Art. 5.

6. Define mathematics. Art. 6.

7. Name the elementary branches of mathematics. Art. 7.

8. Define arithmetic, both as a science and an art. Art. 8.

9. What is a proposition? Art. 9.

10. Into what two kinds are propositions divided, and how would you describe each? Art. 10.

11. Define respectively: an axiom, a theorem, and a problem. Art. 11-13.

12. Which of these, if any, are propositions. Art. 14.

13. Define a demonstration, a solution, an operation, a rule, a formula, and a unit. Art. 15-20.

14. What is number? Art. 21.

15. Describe the different kinds of numbers. Art. 21 and 22.

16. Describe a sign; give those most used in arithmetic, the names by which they are called, and the several operations which they indicate. Art. 25-31.

17. What is ratio, its sign, and how used? Art. 32.

18. What is proportion, its sign, and how used? Art. 33.

19. What are the signs of aggregation, and how used? Art. 34.

20. Give the sign of continuation and its use. Art. 35.

21. What is the sign of deduction, and how read? Art. 36.

22. Which of the signs are symbols of relation? Art. 37.

23. On what proposition does arithmetic depend? Art. 38.

24. What operations respectively indicate increase and decrease? Art. 38.

25. What are the fundamental operations of arithmetic in their regular order? Art. 39.

## NUMERATION AND NOTATION.

1. Define numeration and notation. Art. 40.

2. In how many ways may numbers be expressed? Art. 40.

3. How are numbers represented? Art. 41 and 42.

4. On what does the value of a figure depend? Art. 43.

5. How may the word units be used? Art. 44.

6. How are numbers arranged for convenience in reading and writing them? Art. 46 and 47.

7. Give the names of the periods up to the twentieth. Art. 48.

8. What principles must guide in writing and reading numbers? Art. 48, Prin. 1-3.

9. Give the rule for numeration. Art. 48.
10. Write out in words the following number: 908,070, 605,040,302,010. Art. 48.
11. What is the rule of notation? Art. 48.
12. Express in figures the following: Eighty octillion, sixty sextillion, three hundred and twenty-five quintillion, thirty-three billion, two hundred and two million, ten thousand and ten. Art. 48.
13. What is the English method of numeration? Art. 49.
14. Describe Roman notation and its principles. Art. 50.

### ADDITION.

1. Define addition, and name the result of the operation. Art. 51.
2. Describe its principles. Art. 52.
3. What is the process, and how would you teach it? Art. 52. What are the principles of addition? Art. 52.
4. What is the rule for addition? Art. 52, R.
5. How may addition be proved? Art. 52, Methods 1, 2 and 3.
6. Find the sum of 20,050; three hundred and seventy thousand two hundred; 4,000,005; two million ninety thousand seven hundred and eighty; 100,070; ninety-eight thousand and two; seven million five thousand and one; and 70,007. Art. 52, Ex. 6.

### SUBTRACTION.

1. Define subtraction, and give and explain the names of the numbers used in the operation. Art. 53.
2. Since numbers of the same kind only can be added, what follows as to those that can be subtracted? Art. 54.
3. What principles are involved in subtraction? Art. 54, Prin. 1-5.
4. What is the rule for subtracting simple numbers? Art. 54, R.

5. How is subtraction proved? Art. 54, Proof.
6. Which is the nearer number to 920,736: 1,816,045, or 25,427? Art. 54, Ex. 11.
7. Define book-keeping. Art. 55.
8. Describe the books used in book-keeping, and their uses. Art. 56.
9. Describe debits, credits, and balances. Art. 57.
10. Define balancing accounts. Art. 58.

**MULTIPLICATION.**

1. Define multiplication. Art. 59, 1 and 2.
2. What are the numbers called that are used in the operation, and found in the result? Art. 60.
3. What principles are involved? Art. 60, Prin. 1-7.
4. Into what cases is multiplication divided? Art. 61.
5. Describe the operation and give the rule for Case I. Art. 62, R.
6. How do you prove the work? Art. 62, Proof.
7. What is the solution, rule, and proof in Case II.? Art. 63.
8. Describe a bill of goods sold, services rendered, or work done. Art. 64.
9. What is the common form of receipt? Art. 65.
10. What is a statement of account? Art. 66.
11. What is the process and rule when the multiplier is a composite number? Art. 67.
12. What, when the multiplier is 1 with ciphers annexed? Art. 68.
13. What is the process and rule when there are ciphers on the right in one or both factors? Art. 69.
14. How may the work be contracted when the multiplier is a little less or more than 10, 100, 1,000, etc.? Art. 70.
15. Give the rule for contraction when one part taken as units in the multiplier is a factor of another part so taken. Art. 71.

## DIVISION.

1. Define division. Art. 72, 1, 2, and 3.
2. By what names are the numbers used and the result obtained in division known? Art. 73.
3. To what do the divisor and quotient correspond in multiplication? Art. 74.
4. By what methods may division be expressed, and what are the principles involved? Art. 75.
5. Of what are multiplication and division short methods? Art. 76.
6. Into what two classes are all problems in division divided? Art. 77.
7. Describe the two methods employed in solving problems in division; give the rule for each, and the method of proof. Art. 78.
8. Give the method and rule of contracting division when the divisor is a composite number. Art. 79.
9. What is the operation and the rule when the divisor is 1, with ciphers annexed? Art. 80.
10. What, when ciphers are on the right of the divisor? Art. 81.
11. How do you make it appear that addition and subtraction are the fundamental conceptions in all the operations of arithmetic? Art. 82.
12. Hence, how are numbers classified? Art. 82.
13. How are positive and negative numbers distinguished? Art. 83.
14. What do the signs  $\times$  and  $\div$  simply show? Art. 84.
15. How are numbers affected by the signs  $+$ ,  $-$ ,  $\times$ ,  $\div$ , employed in making numerical statements? Art. 85 and 86.
16. What are the general principles of multiplication and division? Art. 87.
17. What is a short method of multiplying by any simple part of a 100, 1,000, etc.? Art. 88.
18. When a multiplier consists of any number of digits all alike, what is the short method and its rule? Art. 89.

19. What are the method and rule of contraction when it is required to divide by a number ending in any simple part of 100, 1,000, etc.? Art. 90.

## GENERAL PROBLEMS.

1. When the separate cost of several things is given, how do you find the entire cost? Art. 90, 1.

2. When the sum of two numbers and one of them are given, how do you find the other? Art. 90, 2.

3. When the less of two numbers and the difference between them are given, how do you find the greater? Art. 90, 3.

4. The greater of two numbers and their difference being given, how do you find the less? Art. 90, 4.

5. When the cost of one article is given, how do you find the cost of any number at the same price? Art. 90, 5.

6. If the total cost of a given number of articles of equal value is stated, how do you find the value of one article? Art. 90, 6.

7. When a divisor and quotient are given, how do you find the dividend? Art. 90, 7.

8. How do you divide a number into parts, each containing a certain number of units? Art. 90, 8.

9. How do you divide a number into a given number of equal parts? Art. 90, 9.

10. If a product of two numbers, and one of them are given, how do you find the other? Art. 90, 10.

11. If the dividend and quotient are given, how do you find the divisor? Art. 90, 11.

12. If you have the product of three numbers, and two of them are given, how do you find the third? Art. 90, 12.

13. If the divisor, quotient, and remainder are given, how do you find the dividend? Art. 90, 13.

14. If the dividend, quotient, and remainder are given, how do you find the divisor? Art. 90, 14.

**PROPERTIES OF NUMBERS.**

1. What are these properties? Art. 91, 1.
2. How are numbers classified? Art. 91, 2.
3. What is an integer? Art. 91, 3.
4. Define a prime, also a composite number. Art. 91, 5 and 6.
5. When are two numbers prime to each other? Art. 91, 7.
6. How may any even or odd number be known? Art. 91, 8 and 9.
7. What are perfect and imperfect numbers? Art. 91, 10 and 11.
8. When are the latter abundant, and when defective? Art. 91, 11.
9. What is a divisor of a number? Art. 91, 12.
10. When is one number divisible by another? Art. 91, 13.
11. What is a multiple of a number? Art. 91, 14.
12. What must always be true of composite numbers? Art. 91, 15.
13. What are the prime factors of numbers? Art. 91, 16, 1st and 2d.
14. What is an aliquot part of a number? Art. 91, 17.

**FACTORING.**

1. What is factoring, and on what principles and propositions does it depend? Art. 92.
2. Describe and demonstrate the propositions involved in factoring. Art. 93.
3. What are the method and rule for finding the prime factors of composite numbers? Art. 94.
4. Show how the prime factors common to several numbers may be found. Art. 95.
5. How do you find all the divisors of any composite number? Art. 96.

6. What is the difference between a *common* divisor and the *greatest* common divisor of two or more numbers? Art. 97 and 98.

7. What principles are involved in factoring? Art. 98, Prin. 1-7.

8. Find the *greatest* common divisor of 21, 42, 63, and 126 by factoring, and give the work. Art. 99.

9. Find the *greatest* common divisor of 165, 231, and 1,001 by successive divisions; give the work, and state the rule. Art. 100.

### **LEAST COMMON MULTIPLE**

1. Define a common and a least common multiple of two or more numbers. Art. 101 and 102.

2. What are the principles involved? Art. 102.

3. Find the least common multiple of 4, 8, 14, 21, 28, by factoring the numbers separately; give the work and the rule. Art. 103.

4. Find the least common multiple of 30, 45, 48, 80, 120, 135, by dividing the numbers successively by their common primes. Art. 104.

### **SOME PROPERTIES OF THE NUMBER NINE.**

1. Show how addition, subtraction, multiplication, and division are proved by casting out the 9s. Art. 105.

### **CANCELLATION.**

1. Define cancellation; give the sign and the principles involved. Art. 106.

2. State the rule, and solve the following by cancellation, giving the work: How many bales of cotton, of 400 pounds each, at 12 cents a pound, are equivalent to 6 hogsheads of sugar, 900 pounds each, at 8 cents a pound? Art. 106.



## COMMON FRACTIONS.

1. What is a fraction? Art. 107.
2. Into what two classes are they divided? Art. 108.
3. How are common fractions expressed? Art. 109.
4. Describe the denominator and numerator. Art. 110 and 111.
5. What are the terms of a fraction? Art. 112.
6. What does every fraction imply? Art. 113.
7. What two ways are there of considering a fraction whose numerator is greater than one? Art. 114.
8. On what does the value of a fraction depend? Art. 115.
9. Into what classes are common fractions divided? Art. 116.
10. Describe each of these classes. Art. 117-122.
11. How may a whole number be expressed fractionally? Art. 123.
12. What is the reciprocal of a number? Art. 124.
13. When are fractions similar and dissimilar? Art. 125 and 126.
14. Define the numeration of fractions. Art. 127.
15. Describe the notation of fractions, and give the rule both for reading and writing them. Art. 128.
16. Write nine forty-seconds and twenty-four one hundred and fifteenths. Art. 128.
17. What principles follow from the fact that a fraction is an indicated division? Art. 129.
18. In what does the reduction of fractions consist? Art. 130.
19. Give the method of reducing a fraction to its lowest terms and the rule. Art. 131.
20. How do you reduce a fraction to higher terms? Art. 132.
21. Give the method of reducing a whole or mixed number to an improper fraction. Art. 133.

22. What is the rule for reducing an improper fraction to a whole or mixed number? Art. 134.

23. How do you reduce compound to simple fractions? Art. 135.

24. When are two or more fractions said to have a common denominator? Art. 136.

25. What is the least common denominator (L. C. D.) of two or more fractions, and what principles are involved? Art. 137.

26. Show how you reduce fractions to equivalent fractions having a common denominator. Art. 138.

27. By what method and rule do you reduce fractions to equivalent fractions having the least common denominator? Art. 139.

28. How are fractions added? Art. 140 and rule.

29. How subtracted? Art. 141.

30. How would you define the multiplication of fractions, and by what rule is the work done? Art. 142.

31. What must be paid for  $\frac{3}{4}$  of  $\frac{2}{3}$  of a lot of groceries that cost \$18 $\frac{3}{4}$ ? Give the work. Art. 142.

32. What are the three cases in the division of fractions, and what is the rule? Art. 143.

33. How are complex fractions reduced to simple ones? Art. 144.

34. Define the greatest common divisor of two or more fractions. Art. 145.

35. Describe the least common multiple of two or more fractions, and give the rule for finding it. Art. 146.

### DECIMAL FRACTIONS.

1. Define a decimal fraction. Art. 147.

2. How do the orders of integers decrease? Art. 148.

3. Define the terms, decimal places and decimals. Art. 149.

4. How are decimals distinguished from integers? Art. 150.

5. What is a pure decimal? Art. 151.
6. What is a mixed decimal? Art. 152.
7. Describe a complex decimal. Art. 153.
8. What principles are derived from the general law of notation? Art. 154.
9. Describe numeration and notation of decimals. Art. 155.
10. Write: Forty-eight thousand three hundred and five thousandths. Art. 156.
11. What do you understand by the reduction of decimals? Art. 157.
12. What is the method of reducing a decimal to a common fraction? Art. 158.
13. How do you reduce common fractions to decimals? Art. 159.
14. How are decimals added? Art. 160.
15. Give the method and rule for subtracting decimals. Art. 161.
16. Also, for multiplying them. Art. 162.
17. What is Oughtred's method of abbreviating multiplication, and when is it practicable? Art. 163.
18. Describe the method of dividing decimals, and give the rule for the same. Art. 164 and 165.
19. What principles are involved? Art. 165, 1 and 2.
20. Describe and illustrate Oughtred's method, and give the rule. Art. 166.

#### CIRCULATING DECIMALS.

1. How do circulating decimals arise? Art. 167.
2. What principles apply? Art. 167, Prin. I. and II.
3. By what names are interminate decimals usually known, and why? Art. 168.
4. Define a circulate, a repetend, a pure circulate, a mixed circulate, a simple repetend, a compound repetend, a perfect repetend, similar and dissimilar repetends, conterminous and co-originous repetends. Art. 168, 1-12.

5. How may terminate decimals become repetends?  
Art. 169.

6. How may a circulate be changed into its equivalent common fraction? Art. 170.

7. Of what simple arithmetical operations are circulating decimals susceptible? Art. 171.

8. Show how to reduce a pure circulate to a common fraction. Art. 172 and R.

9. Show by example how to reduce a mixed circulate to a common fraction. Art. 173.

10. Solve the following:  $.12\dot{3}$  and  $2.6\dot{3}$ . Art. 173, R.

11. Describe the process of finding the sum of two or more circulates, and add the following:  $\dot{6}$ ,  $.13\dot{8}$ ,  $.0\dot{5}$ ,  $.097\dot{2}$ ,  $.041\dot{6}$ . Art. 174.

12. Describe the subtraction of circulates, and find the difference between  $37.012\dot{8}$  and  $100.7\dot{3}$ . Art. 175.

13. How do you multiply circulates? Art. 176 and R.

14. What is the process and rule for dividing circulates?  
Art. 177.

### COMPOUND DENOMINATE NUMBERS.

1. Define measure and its use, denomination, a denominate number, and a compound denominate number. Art. 178, 1-5.

2. Under what divisions may all denominate numbers be embraced? Art. 178, 6.

3. Define value and its different kinds, and money and its use. Art. 179.

4. Describe United States money. Art. 180.

5. How are sums of United States money read? Art. 181.

6. Describe English or Sterling money. Art. 182.

7. Describe French money. Art. 183.

8. Describe German money. Art. 184.

9. Describe weight and its kinds. Art. 185.

10. Explain the uses of Troy weight, and give its table. Art. 187.

11. In like manner explain the use of apothecaries' weight, and give its table. Art. 188.

12. Next treat avoirdupois or commercial weight in the same way. Art. 189.

13. Compare avoirdupois and Troy weight, and give the table of diamond weight. Art. 190.

14. Explain extension and its dimensions. Art. 191.

15. What measures are embraced in extension? Art. 192.

16. For what is linear measure used? What are its standard, units, and table? Art. 193.

17. Explain chain measure and its use; also give its table. Art. 194, and Rem. 1-3.

18. Explain mariners measure and give its table. Art. 195.

19. Explain cloth measure and its use. Art. 196.

20. For what is superficial or surface measure used, and what is its table? Art. 197.

21. Give the table used by surveyors. Art. 198.

22. What is solid measure, its use, unit, and table? Art. 199.

23. Into what classes are measures of capacity divided? Art. 200.

24. Define liquid measure; give its uses and its table. Art. 201.

25. Give the table for apothecaries' fluid measure, and state its use. Art. 202.

26. For what is dry measure used? Give its unit, and its table. Art. 203.

27. Explain angular or circular measure. Art. 204.

28. What are the method and table for measuring time? Art. 205. How are leap years determined? Art. 206.

29. What is longitude, and how found? Art. 207.

30. Give the tables for book and paper measure. Art. 208.

31. Describe the metric system, its origin, and primary unit. Art. 209.

32. How are the names of the lower and higher denominations formed? Art. 210.

33. What are the units of the various measures to which these prefixes are attached? Art. 211.

34. What is the unit of length in the metric system? Art. 212.

35. What is the unit of surface measure, and how applied? Art. 213.

36. Explain the measure of capacity, and give the table. Art. 214.

37. Do the same for the measure of weight. Art. 215.

38. What principles are derived from the metric system? Art. 216.

39. How do the values of the metric system compare with those in common use? Art. 217.

#### **REDUCTION OF COMPOUND NUMBERS, ETC.**

1. How would you define reduction of compound numbers, and in what two ways does it take place? Art. 218.

2. Give the principles involved. Art. 218, Prin. 1 and 2.

3. What are the method and rule for reducing from higher to lower denominations? Art. 219.

4. What, from lower to higher denominations? Art. 220.

5. Of what arithmetical operations are compound numbers susceptible? Art. 221.

6. Give the method and rule for adding them. Art. 221.

7. Give, the method and rule for subtracting them. Art. 222.

8. What is the difference between £9 18s. 6½d. and £20? Give the work. Art. 222, Ex. 20.

9. Give the process and rule for multiplying compound numbers. Art. 223. Work out the following: 26 bu. 2 pk. 7 qt. .37 pt.  $\times$  10. Art. 223, Ex. 10.

10. How do you divide compound numbers? Art. 224.

11. Work out the following: 76 yr. 108 da. 2 hr. 38 mi. 26.18 sec.  $\div$  45. Art. 224, Ex. 11.

12. How do you find the difference of longitude between two places when the difference of time is given? Also, the difference of time when their longitudes are given? What is the rule for each case? Art. 225 and 226.

13. What are aliquot parts, and what is the rule for their use? Art. 227.

14. Solve the following problem by aliquot parts, and give the work: If the heart beats 97,920 times each day, how many times would it beat in 8 da. 5 hr. 25 min. 30 sec.? Art. 227, Ex. 5.

### RATIO.

1. Define ratio.

2. How is it found?

3. What is its sign?

4. Each number is called what, and both together what?

5. What is a simple and a compound ratio?

6. What is the reciprocal of a ratio?

7. What is an inverse ratio?

8. On what does the value of a ratio depend? For these eight questions see Art. 228, 1-9.

9. What principles and general law are involved in ratio? Art. 229.

### PROPORTION.

1. Define proportion and give its sign. Art. 230, 1 and 2.

2. What are the ratios compared called? Art. 230, 3.

3. Which terms are extremes, which means, and which proportionals? Art. 230, 5.

4. When three numbers are proportional, what is the second number called? Art. 230, 6.

5. Define simple and compound proportion. Art. 230, 7.

6. What are the object and rule of simple proportion? Art. 231.

7. Solve the following and give the work: If I go a journey in  $12\frac{3}{4}$  days, at 40 miles a day, how long would it take me at  $29\frac{3}{4}$  miles a day? Art. 231, Ex. 20.

8. What is compound proportion, and how does it differ from simple proportion? Art. 232.

9. Give the rule for the latter. Art. 232, R.

10. Give the Cause and Effect Rule for solving problems in compound proportion. Art. 232 and 233.

# PERCENTAGE.

1. Explain percentage; give its derivation, its sign, its elements. Art. 234, 1-9.

2. What is a convenient notation for use? Art. 235.

3. The base and rate being given, how do you find the percentage? Art. 236.

4. Give the rules applicable and demonstrate by examples. Art. 236.

5. The base and percentage being given, how do you find the rate? Art. 237.

6. What rules would you give for this? Art. 237, R. 1, and R. 2.

7. The rate and the percentage being given, what are your process and rule for finding the base? Art. 238.

8. The rate and the amount or difference being given, how do you find the base? Art. 239.

9. What additional formulas may also be employed with advantage? Art. 240.

10. What are the two principal applications of percentage? Art. 241.

11. Define profit and loss. Art. 242.

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12. What are the four cases of profit and loss? Art. 243.
13. The cost and the rate being given, how do you find the profit or loss? Art. 244.
14. Solve the sixth example for practice under Art. 244, and give the work.
15. The cost and the profit or loss being given, how do you find the rate? Art. 245.
16. The profit or loss, and the rate being given, how do you find the cost? Art. 246.
17. The selling price and the rate being given, how do you find the cost? Art. 247.

### STOCKS AND BONDS.

1. Define the following terms: A company, a corporation, a charter, shares, scrip, stocks, a bond, an assessment, and a dividend. Art. 248.
2. What four cases arise from problems involving dividends and assessments? Art. 249.
3. The stock and the rate being given, how do you find the dividend or assessment? Art. 250.
4. The stock and dividend or assessment being given, how do you find the rate? Art. 251.
5. The dividend or assessment and the rate being given, how do you find the stock? Art. 252.
6. The rate and the stock plus the dividend, or the stock minus the assessment, being given, how do you find the stock? Art. 253.

### PREMIUM AND DISCOUNT.

1. Define the following terms: Premium, discount, par, drafts, bills of exchange, checks, par value, market value, discount, premium, rate of premium, rate of discount. Art. 254.
2. To what cases do problems involving premium or discount give rise? Art. 255.

3. The par value and the rate being given, how do you find the premium or discount? Art. 256.

4. The face and the discount or premium being given, how do you find the rate? Art. 257.

5. The discount or premium and the rate being given, how do you find the face? Art. 258.

6. The market value and the rate being given, how do you find the par value? Art. 259.

### COMMISSION AND BROKERAGE.

1. Define the following terms: A commission merchant, agent, factor, principal, commission, consignment, consignor, consignee, net proceeds, guaranty of payment, a broker, and brokerage. Art. 260.

2. To what cases do problems involving commission and brokerage give rise? Art. 261.

3. The amount of sale, purchase, or collection, and the rate being given, how do you find the commission? Art. 262.

4. The commission and amount of sale, purchase, or collection being given, how do you find the rate? Art. 263.

5. The commission and rate being given, how do you find the sum on which commission is charged? Art. 264.

6. The rate of commission and the net proceeds or the whole cost being given, how do you find the sum on which the commission is charged? Art. 265.

7. Solve the seventh example under Art. 265, and give the work.

### STOCK INVESTMENTS.

1. Describe a stock exchange. Art. 266, 1.

2. Name and describe the two kinds of United States government bonds. Art. 266, 2.

3. By what are various kinds of United States bonds distinguished? Art. 266, 3.

4. By what authorities, aside from the United States government, are bonds issued? Art. 266, 4.

5. Explain the terms and abbreviations in common use in legitimate stock transactions. Art. 266, Rem. 1-5.

6. What quantities are involved in problems in stock investments? Art. 267.

7. What five cases arise from these quantities, and how are they solved? Art. 267.

8. What would you consider a convenient notation for making the necessary formulas? Art. 268.

9. The amount invested, the market value, and the rate of dividend or interest being given, how do you find the income? Give the formula applicable. Art. 269.

10. The amount invested, the market value, and the income being given, how do you find the rate of dividend or interest? What formula applies? Art. 270.

11. Solve the third example under this article, and give the work. Art. 270.

12. The income, rate of dividend, and market value being given, how do you find the amount invested? Art. 271.

13. Give the proper formula for this case, and solve the fourth example under this article, giving the work. Art. 271.

14. The market value and the rate of dividend or interest being given, how do you find the rate of income? Art. 272.

15. What formula is applicable? Art. 272.

16. Given the rate of income and the rate of dividend or interest, how do you find the market value? Art. 273.

17. What is the formula for this case, and how do you solve the fourth example under it?

### INSURANCE.

1. What is insurance? Art. 274.

2. What two kinds are there? Art. 274, 2.

3. Into what two classes is property insurance divided?  
Art. 274, 3.

4. What is fire insurance? Art. 274, 4.
5. What other kinds of insurance are there? Art. 274, 5, and notes.
6. Into what kinds is personal insurance divided? Art. 274, 6.
7. Define the following terms: Insurer or underwriter, risk, the insured, contract, primary elements, policy, premium, rate, amount or valuation. Art. 274, 7-15.
8. How is insurance business carried on? Art. 274, 16.
9. What are the two kinds of companies? Art. 274, 17.
10. Under what principles are insurance operations transacted, and what quantities are involved therein? Art. 275.
11. The rate of insurance and the amount insured being given, how do you find the premium? Art. 276.
12. Solve the sixth example under this case, and give the work. Art. 276.
13. The amount insured and the premium being given, how do you find the rate of insurance? Art. 277.
14. The premium and the rate of insurance being given, how do you find the amount insured? Art. 278.
15. Solve the fourth example under this case, and give the work. Art. 278.

**TAXES.**

1. What is a tax? What different kinds of taxes are there? Define a direct tax; an indirect tax; a poll tax; a property tax; state and local taxes; an assessor; an assessment roll; a collector. Art. 279, 1-11.
2. What are the quantities involved, and what do they require for the solution of the problems connected with taxation? Art. 280.
3. The taxable property and the rate being given, how do you find the property tax? Art. 281.
4. Solve the second example under this case, and give the work. Art. 281.

5. The taxable property and the tax being given, how do you find the rate? Art. 282.
6. Give the formula and solve the third example under it.
7. The tax and the rate being given, how do you find the assessed value of the property? Art. 283.
8. The amount left after payment of tax, and the rate being given, how do you find the assessed value of the property? Art. 284.
9. Give the formula and solve the first example under it.

#### UNITED STATES REVENUE.

1. From what does the revenue of the United States arise? Art. 285, 1.
2. From what is the internal revenue derived? Art. 285, 2.
3. What are customs and duties? Art. 285, 3.
4. What are *ad valorem* and specific duties, respectively? Art. 285, 4 and 5.
5. What is an invoice? Art. 285, 6.
6. What is a tariff? Art. 285, 7.
7. Where are duties collected? What are the principal custom-house officers? What is tare? How many pounds in a custom-house cwt? Art. 285, 7, N.
8. How are problems in United States customs solved? Art. 286.
9. What quantities are involved, and to what do they correspond? Art. 286.
10. The invoice price and the rate being given, how do you find the duty? Art. 287.
11. The invoice price and the duty being given, how do you find the rate? Art. 288.
12. Give the formula, and solve the third example under article 288.
13. The duty and the rate being given, how do you find the invoice price? Art. 289.

14. The entire cost and the rate being given, how do you find the invoice price? Art. 290.

15. Give the formula and solve example three (giving the work) under this case. Art. 290.

INTEREST.

1. What is interest? Art. 291, 1.

2. Define the following terms in their application to interest: The principal, rate of interest, and amount. Art. 291, 2-4.

3. When is interest payable? Art. 291, 5.

4. What is the legal rate of interest? Art. 291, 6.

5. What is usury? Art. 291, 7.

6. When no per cent of interest is mentioned in the note, how much is collectable by law? When stipulated in the note, what per cent may be collected? Art. 291, 7, Rem. and N.

7. What kinds of interest are there? Art. 291, 8.

8. Define simple interest. Art. 291, 9.

9. How does simple interest differ in its applications from the percentage applications already given? Art. 292.

10. What quantities are embraced in questions of interest, any three of which being given, the others may be found? Art. 293.

11. What is the notation given for formulas? Art. 294.

12. The principal, the rate, and the time being given, how do you find the interest and the amount? Art. 295.

13. Give the problem and the rule under it, and solve the seventh example under article 295.

14. Explain and apply the method by aliquot parts. Art. 296.

15. Also, explain and apply the six per cent methods. Art. 297.

16. Solve the tenth example under article 297, and give the work and the rule.

17. The principal, the rate, and the interest being given, how do you find the time? Art. 298.

18. Solve the seventh example under this article, and give the work and the rule. Art. 298.

19. The principal, interest, and time being given, how do you find the rate? Art. 299.

20. Give the formula and rule applicable. Art. 299.

21. Solve the seventh example under this article, and give the work. Art. 299.

22. The interest, rate, and time being given, how do you find the principal? Art. 300.

23. Solve the fifth example under article 300.

24. The amount, rate, and time being given, how do you find the principal? Art. 301.

25. Solve the third example under article 301.

#### PROMISSORY NOTES.

1. Define a promissory note. Art. 302, 1.

2. Explain the following terms: The face, the maker, the payee, the original parties, the holder, the indorser, a time note. Art. 302, 2-7.

3. Write out a note in the ordinary form; also, a joint note, a principal and surety note, and a demand note, all four in proper form and order. Art. 302, 7 and 8.

4. What notes are negotiable, and how? Art. 302, 9.

5. What notes do not require an indorsement on being transferred? Art. 302, 10.

6. What is necessary as to indorsement with notes payable to order on being transferred? Art. 302, 11.

7. How may an indorser free himself from responsibility for the payment of a note? Art. 302, 11, Rem. 1.

8. Describe blank and special indorsements. Art. 302, 11, Rem. 2.

9. What words are essential to a valid promissory note? Art. 302, 12.

10. What is the effect where a note contains the words, "with interest"? Art. 302, 13. .

11. When is a note legally due? Art. 302, 14.

12. When is a note said to go to protest? Art. 302, 15.

13. What forms are necessary in protesting a note? Art. 302, 15, Rem.

14. If a note is payable a certain time "after date," how do you find the day it is legally due? Art. 303.

15. Find the maturity and amount of following note:

\$4,650.80.

St. Louis, Mo., Aug. 10, 1875.

For value received, three months after date I promise to pay Oliver Davis, or order, four thousand six hundred and fifty  $\frac{80}{100}$  dollars, with interest at the rate of 10 per cent per annum, negotiable and payable without defalcation or discount.

Surety, OLIVER DAVIS.

MILTON MOORE.

\$4770.95. Art. 303.

16. Explain annual interest. Art. 304.

17. Solve the first example under this article, and give the work and rule. Art. 304.

18. What are partial payments? Art. 305.

19. What is the United States Rule? Art. 306.

20. On what principles is it based? Art. 307.

21. Work out the second example on page 263, and give the work. Art. 307.

22. What is the Connecticut Rule? Art. 308.

23. Give, also, the Vermont rule. Art. 308.

24. What is the Mercantile Rule, and by whom is it used? Art. 309.

### TRUE DISCOUNT.

1. Define discount, present worth, and true discount. Art. 310, 1-3.

2. How may the different cases of true discount be solved? Art. 311.

3. The face, time, and rate being given, how do you find the present worth and true discount? Art. 312.

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**BANK DISCOUNT.**

1. What is a bank? Art. 313.
2. What are the chief functions of a bank? Art. 313, 2.
3. How are banks classified? Art. 313, 2, Rem.
4. Into what two general classes may banks of the United States be divided? Art. 313, 3.
5. Define the following terms in their application to banking: A check, a draft, a sight-draft, a time-draft, the signer, the drawee, the payee, the indorsement. Art. 313, 4-13.
6. How are problems in bank discount solved? Art. 314.
7. The face of the note, the rate, and the time being given, how do you find the discount and proceeds? Art. 315.
8. Work out the fourth example under this article. Give the work and the rule. Art. 315.
9. The proceeds, time, and the rate of discount being given, how do you find the face of the note? Art. 316.
10. Give the solution and work of the fifth example under article 316.
11. The rate of bank discount being given, how do you find the corresponding rate of interest? Art. 317.
12. The rate of interest being given, how do you find the corresponding rate of discount? Art. 318.
13. Solve the third example under article 318, and give the work.

**EXCHANGE.**

1. Define exchange, a bill of exchange, domestic exchange, and foreign exchange. Art. 319, 1-6.
2. How are foreign bills of exchange drawn?
3. Give an example fully written out. Art. 319, 7.
4. What is the rate of exchange? Art. 319, 8.
5. Define the course of exchange. Art. 319, 9.
6. What is the par of exchange? Art. 319, 10.

7. Describe intrinsic par of exchange. Art. 319, 11.
8. What is commercial par of exchange? Art. 319, 12.
9. In accordance with what principles are problems in domestic exchange solved where time is involved? Art. 320.
10. Solve the fourth example under article 320.
11. Describe foreign exchange and the method of getting it. Art. 321.
12. Solve the third example under article 321.
13. Describe arbitration of exchange. Art. 322, 1-4.
14. Solve problem first, on p. 285. Art. 322.

## EQUATION OF PAYMENTS.

1. Define equation of payments. Art. 323, 1.
2. What is equated time? Art. 323, 2.
3. What is the term of credit? Art. 323, 3.
4. What is the average term of credit? Art. 323, 4.
5. What is it to average an account? Art. 323, 5.
6. Explain settling or closing an account. Art. 323, 6.
7. What is the focal date? Art. 323, 7.
8. On what is the equation of payments based? Art. 324, Prin. 1 and 2.
9. What is the rule when the terms of credit begin at the same date? Art. 325.
10. What is a compound equation? Art. 326.
11. Solve example ninth, on p. 291, and give the work. Art. 326.

## SETTLEMENT OF ACCOUNTS.

1. What is an account? Art. 327.
2. What is an account current? Art. 327, 2.
3. What is aimed at by the parties in settling an account? Art. 328, 1 and 2.
4. What are the processes respectively called? Art. 328.
5. How is interest reckoned, generally, in accounts current? Art. 329.

6. What are bills receivable? Art. 329, Ex. 2, Rem.
7. Define account sales. Art. 330.
8. How are such accounts averaged? Art. 331.
9. What are storage accounts? Art. 332.

### COMPOUND INTEREST.

1. What is compound interest? Art. 333, 1, 2, and 3.
2. The principal, rate, and time being given, how do you find the compound interest and amount? Art. 334.
3. Solve the fourth example on p. 300. Give the work and the rule. Art. 334.
4. For what are compound interest tables used? Art. 335.
5. Illustrate the method of using these tables. Art. 335, Pp. 302, 303, and 304.
6. Solve the seventh example on p. 304, and give the work. Art. 335.
7. The principal, rate, and compound interest or amount being given, how do you find the time? Art. 336.
8. Give the rule, and solve the third example under it, giving the work. Art. 336, R.
9. The principal, the compound interest or amount, and the time being given, how do you find the rate? Art. 337.
10. Solve the fourth example under this case, and give the work and the rule. Art. 337.
11. The compound interest or amount, the time, and the rate being given, how do you find the principal? Art. 338.
12. Solve the third example under this article, giving the rule and work. Art. 338.

### ANNUITIES.

1. Define an annuity, a perpetual annuity, a limited annuity, a certain annuity, a contingent annuity, an immediate annuity, and a deferred annuity. Art. 339, 1-7.

2. When is an annuity forborne or in arrears? Art. 339, 8.

3. Describe the forborne or final value of an annuity. Art. 339, 9.

4. What is the present value of an annuity? Art. 339, 10.

5. What is the initial value of an annuity? Art. 339, 11.

6. What do the practical applications of annuities include? Art. 339, 12.

7. Define the first payment of an annuity. Art. 339, 12, Rem.

8. The payment, the interval, and the rate being given, how do you find the initial value of a perpetuity? Art. 340.

9. Give the rule, and show how it applies in the solution of example third, under article 340.

10. The payment, the interval, the rate, and the time the perpetuity is deferred being given, how do you find the present value? Art. 341.

11. Solve the fourth example under this case, giving the work. Art. 341.

12. The rate, the payment, the interval, and the time to run being given, how do you find the present value of an annuity certain? Art. 342.

13. The payment, the interval, the rate, and the time to run being given, how do you find the final or forborne value of an annuity? Art. 343.

14. Solve the fourth example under this article. Give the rule and the work. Art. 343.

15. To what cases can the table on p. 314 be applied in solving them? Art. 344.

16. The rate, the time to run, and the present or final value of an annuity being given, how do you find the payment? Art. 345.

17. Solve the second example under this article. Give the rule and work. Art. 345.

18. The payment, the rate, and present value of an an-

nunity being given, how do you find the time it runs? Art. 346.

19. Solve the third example under this article, and give the rule and the work. Art. 346.

20. The payment, time to run, and present value of an annuity being given, how do you find the rate of interest? Art. 347.

21. What do contingent annuities comprise? Art. 348.

22. On what does the value of such annuities depend? Art. 348, 2, and 3.

23. Describe "mortality tables," and define their use. Art. 348, 4; 349.

24. The age being known, how do you find the value of a given annuity on the life of a person? Art. 351.

25. How do you find how large a life annuity can be purchased, for a given sum, by a person whose age is known? Art. 352.

26. Solve the second example on p. 321, and give the rule and the work. Art. 352.

27. How do you find the present value of the reversion of a given annuity; that is, what remains of it after the death of its possessor, whose age is known? Art. 353.

### PERSONAL INSURANCE.

1. Name and describe the two kinds. Art. 354, 1, 2, and 3.

2. Name the kinds of policies issued by life insurance companies. Art. 354, 4.

3. What are the chief policies in use? Art. 354, 5.

4. Describe them. Art. 354, 6, and 7.

5. What quantities are considered in life insurance? Art. 355, 2.

6. Solve the fifth example on p. 324, and give the work. Art. 355.

PARTNERSHIP.

1. Define partnership. Art. 356.
2. Define capital, assets, and liabilities. Art. 356, 2.
3. What two cases does partnership involve? Art. 356, 3.
4. How do you apportion the gain or loss when all of each partner's stock is employed through the same time? Art. 357.
5. Give the rule, and apply it in solving the third example on p. 328. Art. 357.
6. How do you apportion the gain or loss when the full shares are not continued through the same period? Art. 358.
7. Give the rule, and apply it in solving the sixth example on p. 330. Art. 358.
8. Define bankruptcy, and name the parties involved in it. Art. 359, 1-3.
9. Solve the third example on p. 332, and give the work. Art. 359.

ALLIGATION.

1. Define alligation, its kinds, and uses. Art. 360.
2. What is alligation medial? Art. 361.
3. Solve the second example on p. 333, and give the work. Art. 361.
4. Define alligation alternate. Art. 362.
5. How do you proportion the parts, none of the quantities being limited? Art. 363.
6. Solve the third example on p. 336, and give the work and the rule. Art. 363.
7. How do you proportion the parts, one or more of the quantities, but not the amount of the combination, being given? Art. 364.
8. Solve example seven, on p. 339, and give the work. Art. 364.
9. How do you proportion the parts, the amount of the

whole combination being given? Art. 365. Solve the third example on p. 340; give the work and the rule. Art. 365.

### INVOLUTION.

1. Define the power of a quantity. Art. 366.
2. Define the root of a power. Art. 366, 2. What is an exponent of a power? Art. 366, 3.
3. Define the second and third powers of a quantity. Art. 366, 4, 5.
4. How do you find any power of a number higher than the first? Art. 367.
5. What shorter methods of getting the higher powers of a number may be used? Art. 367, notes.
6. What is the difference between raising a power to a power, and multiplying together different powers of the same root? Art. 368, N.
7. To what is any power of a fraction equal? Art. 369.
8. How many decimal places must the square, cube, etc., of a decimal contain? Art. 370.
9. What rule results from this? Art. 370, R.
10. What are the special processes for squaring and cubing numbers? Art. 371.
11. To what is the square described on the sum of two lines equal? Art. 372.
12. To what is the cube of any number composed of two parts equal? Art. 372, Prin.

### EVOLUTION.

1. Define evolution. Art. 373.
2. What is the root of a number? Art. 373, 2.
3. What is to be understood by the degree of a root? Art. 373, 3.
4. How are different roots indicated? Art. 373, 4.

5. In what other way may a root be indicated? Art. 373, 5.
6. Define perfect and imperfect powers. Art. 373, 6 and 7.
7. Define the square and cube roots of numbers. Art. 373, 9 and 10.
8. What principles belong to evolution? Art. 374.
9. Explain square root. Art. 374, Exp.
10. Give the rule for extracting the square root of an integer, fraction, or mixed number, if written in the decimal notation. Art. 375.
11. Solve the thirteenth example on p. 353. Art. 375.
12. To what is the square root of the product of any number of quantities equal? Art. 376.
13. To what is the square root of a fraction equal? Art. 377.
14. Solve the sixth example on p. 354, and give the work. Art. 377.

**EXTRACTION OF THE CUBE ROOT.**

1. What is the rule for extracting the cube root of a number written in the decimal notation as a whole number, fraction, or mixed number? Art. 378. To what is the cube root of any product equal? Art. 379.
2. To what is the cube root of a common fraction equal? Art. 380.
3. Solve the eleventh and fourteenth examples on p. 359, and give the work. Art. 380.
4. How may the root of any degree be extracted? Art. 381 and 382.
5. Describe Horner's method, and give the rule. Art. 383.
6. How may the process be shortened? Art. 384.
7. Solve the third example on p. 362, and give the work. Art. 384.



**APPLICATIONS OF SQUARE AND CUBE ROOT.**

1. Define a triangle. Art. 385, 1.
2. What is the base of a triangle? Art. 385, 2.
3. What is the altitude of a triangle? Art. 385, 3.
4. Show without geometry that the three angles of a triangle are equal to two right angles. Art. 385, 3, Rem.
5. Define an equilateral triangle. Art. 385, 4.
6. Define a right-angled triangle, giving the names of its sides. Art. 386.
7. How can you practically prove, without the geometrical demonstration, that the square described upon the hypotenuse of a right-angled triangle is equal to the sum of the squares described on the other two sides? Art. 386.
8. Two sides of a right-angled triangle being given, how do you find the other two? Art. 387 and R.
9. The hypotenuse and one side being given, how do you find the other? Art. 388 and R.
10. Solve the second and fourth examples on p. 365, and give the work. Art. 388.
11. By what simple method may integers, expressing the sides of right-angled triangles, be found to any extent? Art. 388, Rem.
12. What are parallel lines? Art. 389, 1.
13. Define similar figures. Art. 389, 2, and remarks.
14. What is the ratio between the areas of similar figures? Art. 389, 3.
15. Describe the ratio of the solidities of similar solids to each other. Art. 389, 4.
16. Solve the third, fourth, and fifth examples on p. 367. Art. 389.

**SERIES.**

1. Define a series and its law. Art. 390, 1 and 2.
2. Define an arithmetical progression. Art. 391, 1.
3. *Under the relations of what five quantities may every*

arithmetical progression be considered, such that any three of them being given the others may be found? Art. 391, 2.

4. How many cases arise out of these? How many cases will answer every purpose? Art. 391, 3.

5. One extreme, the common difference, and the number of terms being given, find the other extreme. Art. 392.

6. Solve the second example on p. 370. Give the work and the rule. Art. 392.

7. The extremes and the number of terms being given, how do you find the sum of the series? Art. 393.

8. Solve example fourth on p. 372, and give the work and the rule. Art. 393.

9. What is geometrical progression? Art. 394, 1.

10. What is the difference between an ascending and a descending series? Art. 394, 1.

11. Under the relations of what quantities may geometrical progression be considered, and how are they represented? Art. 394, 2.

12. To how many different classes of problems do these quantities give rise, and how many of these are necessary for the calculations? Art. 394, 3.

13. One extreme, the common ratio, and the number of terms being given, find the other extreme. Art. 395.

14. Solve the fourth example on p. 374. Give the work and the rule. Art. 395.

15. One extreme, the ratio and the number of terms being given, find the sum of the terms. Art. 396.

16. Solve the fourth example on p. 376. Give the work and the rule. Art. 396.

## MENSURATION.

1. Define geometry and mensuration. Art. 397, 1, 2, 3.

2. Define a line, a straight line, a broken line, a curved line, a horizontal line, and a vertical line. Art. 398, 1-6.

3. Define an angle. Art. 399.

4. Define a surface and a solid. Art. 400, 1.
5. What is a plane? Art. 400, 2.
6. Describe a plane figure, a polygon and its perimeter, an area and its measuring units, a regular polygon, a polygon of three, four, five, six sides, etc. Art. 400, 3-7.
7. Describe the diagonal, the base, and the altitude of a polygon. Art. 400, 8, 9, and 10.
8. Describe the center and apothem of a regular polygon. Art. 400, 11.
9. How are triangles classified? Art. 401.
10. Describe acute triangles and obtuse triangles. Art. 401, 1.
11. Describe also a scalene, an isosceles, and an equilateral triangle. Art. 401, 2.
12. What are the three classes of quadrilaterals called, and how would you describe them respectively? Art. 402, 1, 2, 3.
13. Describe the three classes of parallelograms. Art. 403, 1, 2, 3.
14. On what principles do the general rules applicable to triangles and quadrilaterals depend? Art. 404.
15. How do you find the area of a parallelogram? Art. 404, i.
16. How do you find the area of a triangle? Art. 404, ii.
17. How do you find the area of a trapezoid? Art. 404, iii.
18. How do you find the area of a triangle when the sides are given? Art. 404, iv.
19. Solve the twelfth example on p. 384, giving the work and rule. Art. 404.
20. Into what may any regular polygon be divided, and how? Art. 405.
21. How do you find the area of such polygons? Art. 406.
22. Describe a circle, its chord, its arc, its segment, its *tangent*, its *secant*, its radius, and its sector. Art. 407, 1-6.

23. What are the general rules for finding, 1st, the circumference; 2d, the diameter; 3d, the area; 4th, the area of a sector; 5th, the area of a segment less than a semi-circle of any circle? Art. 409, I, II, III, IV, V.

## SOLIDS.

1. Define a solid, the faces and edges of a solid, a prism, a right prism, a parallelopiped, a cube, a cylinder, a pyramid, a cone, a frustum, a sphere, the slant height of a pyramid, the slant height of a cone, the altitude of any solid, and the volume of a solid. Art. 410, 1-14.

2. When are solids similar? Art. 410, 15.

3. How do you find the convex surface and the volume of a prism or cylinder? Art. 410, R. I and II.

4. How do you find the convex surface and the volume of a pyramid or cone? Art. 410, R. III and IV.

5. How do you find the convex surface and the solidity of a frustum of a pyramid or cone? Art. 410, R. V and VI.

6. How do you find the surface and the volume of a sphere? Art. 410, R. VII and VIII.

7. What is the ratio of similar solids to each other, and how are the sphere, cone, and prism regarded? Art. 410, p. 393, notes 1, 2, and 3.

8. Solve the practical examples on pp. 393-395, Art. 410.

9. What is the method of measuring mason's work? Art. 411.

10. How do you find the number of perches in any piece of masonry? Art. 412.

11. How is brick work estimated? Art. 412, N.

12. Solve the third, fourth, and fifth examples on p. 396, giving the work. Art. 412.

13. Define gauging, and show how to gauge any vessel in the form of a rectangular solid, cylinder, cone, frustum of a cone, etc. Arts. 413 and 414.

14. Is there any shorter method? Art. 414 and note.
  15. Solve the second, third, and fourth examples under article 414, giving the work.
  16. What is the method of finding the contents, in gallons, of a cask or barrel? Art. 415.
  17. Solve the first, second, and third examples under this article (415), giving the work.
  18. How do you find the amount of square-edged inch-boards that can be sawed from a round log? Art. 416.
  19. Solve the second and third examples on p. 398, giving the work. Art. 416.
  20. How are grain and hay usually estimated and sold? Art. 417.
  21. How do you find the quantity of grain in a wagon or in a bin? Art. 418.
  22. How do you find the quantity of hay in a stack, rick, or mow? Art. 419.
  23. Solve the examples for practice on p. 399, giving the work and the rule applicable in each. Art. 417-19.
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## GEOGRAPHY.

The questions following refer to the *ECLECTIC COMPLETE GEOGRAPHY*, the second of the new two-book series lately issued by Van Antwerp, Bragg & Co., Cincinnati and New York.

1. What is a planet? P. 5; 1.
2. What is the earth? P. 5; 2.
3. What is geography? Into what three branches is it divided? P. 5; 3.
4. Of what does mathematical geography treat? P. 5; 4.
5. What is said of physical geography? P. 5; 5.
6. Define political geography. P. 5; 6.
7. What is a sphere? A hemisphere? P. 5; 1.
8. What is the general shape of the earth? How do we know the earth is round? P. 5; 2.

9. Define the diameter of a spherical body. P. 6; 3.
10. What is the axis of the earth, and what are the poles? P. 6; 4.
11. What is the exact shape of the earth? What is its shortest diameter? P. 6; 5.
12. What is the length of the axis of the earth, and how does it compare with the longest diameter? P. 6; 6.
13. What is area? What is the area of the earth? P. 6; 7.
14. Name the four principal directions and define each. P. 6; 8.
15. Name and define the four secondary directions. P. 6; 9.
16. Describe the compass. P. 6; 10.
17. What is a circle? P. 6; 11.
18. What is the circumference of a circle? P. 6; 12.
19. What is a great circle? P. 6; 13.
20. What is a small circle? How is a circumference divided for purposes of measurement? P. 16; 15.
21. Define the equator. How does it divide the earth, and what is its length? P. 6; 16.
22. What are parallels, and how are they numbered? P. 6; 17.
23. What are meridians? What is a prime meridian? Through what place does the meridian most frequently used as the prime, pass? P. 6; 18.
24. Define longitude. P. 7; 19.
25. Define latitude. P. 7; 20.
26. State the difference between degrees of latitude and degrees of longitude. P. 7; 21, 22.
27. What are the tropics? Name them, and tell which is north and which is south of the equator. P. 7; 23.
28. Name and describe the polar circles. P. 7; 24.
29. What is a zone? P. 7; 25.
30. Into how many zones do the tropics and polar circles divide the earth? P. 7; 25.

31. Describe the five zones. P. 7; 26.
32. Describe the two motions of the earth. P. 7; 27.
33. What is the direction of the earth's rotation? P. 7; 28.
34. What is the cause of day and night? P. 7; 29.
35. Describe the International Date Line. P. 7; 30.
36. What length of time is required for the earth to make one revolution around the sun? P. 7; 31.
37. What is the orbit of the earth? P. 7; 32.
38. What is the plane of the ecliptic? P. 7; 33.
39. Is the earth's axis perpendicular to the plane of the ecliptic? What angle does it make with this perpendicular? What does this angle determine? P. 7; 34.
40. Is the general direction of the earth's axis steady or variable? P. 7; 35.
41. What cause the changes of the seasons? How many seasons are there in each zone? Name and describe each. P. 7; 36.
42. What is a globe? P. 8; 37.
43. Define a map. P. 8; 38.
44. What is a projection? Name the principal ones, and tell the peculiarities of each. P. 8; 39.
45. How are the meridians and parallels usually numbered on a map? P. 8; 40.
46. What is meant by the scale of a map? P. 8; 41.
47. In what proportion is the land and water upon the earth? P. 9; 1.
48. What do we call that part which is covered by water? P. 9; 2.
49. Into how many masses is the land surface of the earth divided? What name has been given to these masses? What is each called? P. 9; 3.
50. Which continent is the largest? How many grand divisions does it contain? How does it compare with the land surface of the earth? What is its greatest extent? P. 9; 4.

51. How does the western continent compare with the eastern continent in size? Name its grand divisions and tell its greatest extent. P. 9; 5. 30

52. Which continent is the smallest? What proportion of land surface does it contain? What is the proportion of land in the northern and in the southern hemispheres? P. 9; 6. 31

53. What is an ocean? Name the oceans on the earth. P. 9; 7.

54. Describe each ocean. P. 9; 8-11.

55. What are considered parts of the boundaries of the oceans? How does the Pacific compare in size with the others? P. 9; 12.

56. Where is the greatest mass of land? Of water? P. 34 9; 13.

57. Describe a gulf, sea, bay or inlet. P. 9; 14.

58. What is a strait? What other name is applied to a similar body of water? P. 9; 15.

59. Define a sound. P. 9; 16.

60. What is the difference between a continent and an island? P. 9; 17.

61. What is an island? What proportion do all the islands of the world bear to the land area? P. 9; 18.

62. Define an archipelago. P. 9; 19.

63. What is a peninsula? P. 9; 20.

64. What is an isthmus? P. 9; 21.

65. Define a cape. What is a high cape called? P. 9; 22.

66. What is a plain? P. 9; 23.

67. What are plains called which have an elevation above the sea-level of more than 1000 feet? By what other name is a plateau known? How would you mark elevation above the sea? P. 9; 24.

68. Define the following terms: A hill; a mountain; a range or chain. What is meant by the following expressions: The trend of a mountain; a peak; a pass; a spur? P. 9; 25.



69. What is a mountain system? P. 9; 26.

70. Define a valley or basin. P. 9; 29.

71. From what is the elevation of the land measured? P. 9; 30.

72. What is a volcano? A crater? Why has it been thought that parts of the interior of the earth consist of melted matter? P. 9; 31.

73. What are earthquakes, and near what phenomena are they most frequent? P. 9; 32.

74. What can you say of the water of the sea? What is the composition of sea-water? P. 12; 33.

75. What is the greatest measured depth of the sea? What exists in the bottom of the sea similar to things found on our earth? How has this fact been demonstrated? P. 12; 34.

76. What three movements has the sea? P. 12; 35.

77. What is a wave? How are waves caused? What can you say regarding the size of waves? What are breakers? How are they caused? P. 12; 36.

78. What can you say of tides? P. 12; 37.

79. What are ocean currents? What is the cause of their formation? P. 12; 38.

80. What is the Gulf-stream? Where is it formed? In what direction does it flow? Where does it stop? What becomes of part of the moisture contained in it? P. 12; 39.

81. Describe the Japanese Current. What curious phenomena are produced by these streams? What are they called? P. 12; 40.

82. Whence do the fresh waters of the earth come? In what forms are they deposited upon the earth? P. 12; 41.

83. What is a spring, and how is it formed? What is a geyser? P. 12; 42.

84. Define a river. What names are applied to smaller streams? Define a mouth, branch, tributary, and affluent of a stream. Also a channel and a cañon. P. 12; 43.

85. What are the right and left banks of a stream? Its *velocity*? When is a stream navigable? P. 12; 44.

86. Define rapids, cataracts, cascades, and falls. P. 52  
12; 45.
87. What is a river system? P. 12; 46. 53
88. What is a river basin or valley? P. 12; 47. 54
89. What is an estuary? P. 12; 48.
90. What is a delta? P. 12; 49.
91. What is a water-shed, or divide? P. 12; 50.
92. What is a lake? When are lakes salt? What are lagoons? P. 12; 51. 55
93. Define a swamp. P. 12; 52.
94. What is the atmosphere? What is its greatest height above the surface of the earth? What is the pressure of the atmosphere at the sea-level? At an elevation of 10000 feet? At 21000 feet? P. 12; 53.
95. Describe the construction of the barometer. For what is it used? P. 12; 54.
96. What is temperature? P. 13; 55.
97. Of what does the thermometer consist, and to what use is it put? P. 13; 56.
98. What is the mean annual temperature of a place? P. 13; 57.
99. What are isotherms? P. 13; 58.
100. From what body does the earth receive its warmth? P. 13; 59.
101. What is the snow line? At what elevations on the earth is it found? P. 13; 60.
102. By what are the zones of climate bounded? P. 13; 61.
103. Where is the climatic torrid zone? The climatic temperate zones? The climatic frigid zones? P. 13; 62.
104. What are winds, and how are they caused? P. 13; 63.
105. There are how many zones of calms extending around the earth? P. 13; 64.
106. Name and describe the calms. P. 13; 65.
107. What are the trade-winds? P. 14; 66.

108. Describe the anti-trades. P. 14; 67.
109. Define periodic and variable winds. P. 14; 68.
110. Of what use are the winds? What is the movement in miles per hour of a light breeze, a strong breeze, a gale, and a hurricane? P. 14; 69.
111. What does the air contain? What is evaporation? P. 14; 70.
112. When is the air saturated? How are rain, snow, etc., formed? P. 14; 71.
113. Define dew. P. 14; 72.
114. What is fog? P. 14; 73.
115. What are clouds, and how are they formed? P. 14; 74.
116. Define rain, snow, and hail. P. 14; 75-77.
117. What are glaciers? In what manner are they formed? How far do they extend? P. 14; 78.
118. Define an iceberg, and describe its formation. P. 14; 79.
119. What is meant by the annual rain-fall of a country? What is the average annual rain-fall in the several zones? P. 14; 80.
120. Give a definition of climate. P. 14; 81.
121. What is a continental climate? P. 14; 82.
122. What is meant by an oceanic or insular climate? What are the chief factors of climate? What are the causes which tend to modify the climate of any place? How may we predict climatic changes? What is the Signal Service of the United States, and of what value is it? P. 14; 83.
123. How is the soil produced? P. 15; 84.
124. What do plants require for their growth? P. 15; 85.
125. How is a plant nourished? P. 15; 85.
126. When is soil fertile? P. 15; 86.
127. Upon what is the distribution of plants dependent? Why is the growth of plants more stunted in the temperate than in the torrid, and in the frigid than in the temperate zone? P. 15; 87.

128. What do you know of the vertical distribution of plants? P. 15; 88.

129. Mention several regions distinguished by their vegetation. P. 15; 89.

130. Define a desert; an oasis. P. 15; 90.

131. What are prairies? Forests? What is the provincial name in different countries of prairies? P. 15; 91.

132. What are deciduous trees? Name some of the different varieties. What is said of evergreen trees? P. 15; 92, 93.

133. Upon what does the distribution of animals mainly depend? P. 15; 94.

134. In what zone are the strongest animals found? In what zone are the most useful animals? From the animals of what zone are the best furs obtained? P. 15; 95.

135. What can you say regarding marine animals? Name some marine animals found in the different zones. P. 15; 96.

136. What are minerals? Name some of the most important. P. 15; 97.

137. Give the population of the earth. P. 15; 1.

138. What is meant by the density of population? P. 15; 2.

139. Into how many races may the people of the world be divided? Name the five races. P. 15; 3.

140. Which race is the most civilized and the most numerous? What are the peculiarities of this race, and what parts of the world are most inhabited by it? P. 15; 4.

141. Describe the remaining races—the Mongolian, the Ethiopian, the Malay, and the American. Give the peculiarities of each, and tell in what countries they are mostly found. P. 15; 5-8.

142. Regarding the manner of life of the nations of the earth, into how many and what classes may they be divided? P. 16; 9.

143. Define barbarous, half-civilized, and civilized nations, and tell what you know regarding their habits, etc. P. 16; 10-12.

144. What are the four principal occupations? P. 16; 13.

145. Define agriculture. What industries are comprehended under this term, or are closely allied to it? Name some of the products raised in different parts of the world. P. 16; 14, 15.

146. What is mining? Name the principal minerals. What is the most useful metal? To what uses are the other minerals put? P. 17; 16.

147. Define manufacturing, and name the principal manufacturing countries. P. 17; 17.

148. What is commerce? Into what two branches is it divided? Define each. P. 17; 18.

149. What are exports? Imports? P. 17; 19.

150. How are goods transported? How many miles of railroads in the world? In the United States? What are canals? P. 17; 20.

151. What is meant by a state? P. 17; 21. What is the government of a state? P. 17; 22.

152. What three functions has every government? What are the duties of each? P. 17; 23.

153. What two kinds of governments exist? P. 17; 24.

154. What is a republic? What is the head of a republic called, and what are his duties? P. 17; 25.

155. What is a monarchy? How many and what kinds of monarchies exist? What peculiarities distinguish them? P. 17; 26.

156. Define an empire, a kingdom, and a principality. P. 17; 27.

157. What is the capital of a country? A metropolis? A port of entry? P. 17; 28.

158. What country claims the oldest known religion? What were its main points? P. 17; 29.

159. What is Brahminism? Who are its votaries? P. 17; 30.

160. What can you say concerning Buddhism? The Jewish religion? P. 17; 31, 32.

161. What can you say of Christianity? Mohammedanism? Paganism? P. 17; 33-35.

162. Give the estimated number of followers of each religion. P. 17; 36.

NORTH AMERICA.

163. Locate North America. What proportion of the land surface of the globe does this continent contain? P. 20; 1.

164. What is the shape of North America? What can you say regarding its outline? P. 20; 2.

165. What is said of the western part? By what name is this known? P. 20; 3.

166. Describe the Cordilleras. P. 20; 4.

167. Name the highest peaks of the Cordilleras. P. 20; 5.

168. What can you say regarding the Great Plains? P. 20; 6.

169. Describe the Appalachian Mountain system. P. 20; 7.

170. Describe the surface between the two mountain systems. P. 20; 8.

171. Where is the Atlantic Coast Plain? P. 20, 9.

172. For what is North America distinguished? P. 20; 10.

173. Name the most important rivers. P. 20; 11.

174. Name the five Great Lakes. What is said of the region to the north-westward of these lakes? P. 20; 12.

175. In what zone does the greater part of North America lie, and what distinguishes this part? P. 20; 13.

176. What is said of the northern part of the continent? P. 20; 14.

177. What is said of the part below the tropic of Cancer? P. 20; 15.

178. What can you say of the rain-fall of the grand division? How is the climate moderated on the western coast? What occasions the colder climate of the eastern coast? P. 20; 16.

179. What animals are found? P. 20; 17.

180. Name the minerals. P. 20; 18.

181. How many inhabitants has North America? To what races do they belong? What parts of the continent are inhabited by each race? P. 20; 19.

182. Name the political divisions of North America in the order of their importance. P. 20; 20.

183. To whom do Greenland and Iceland belong? What is the general character of the surface? Name the chief occupations of the inhabitants. P. 20; 21, 22.

### THE UNITED STATES.

184. Where is the United States? What section of country does it include in the north-western part of the grand division? Between what parallels is it? What is its average length from east to west? Give its breadth north and south. P. 21; 1.

185. Describe its outline. P. 21; 2.

186. What is its area, and how does it compare with the other states of the world in this respect? P. 21; 3.

187. What divisions make up the surface of the United States? Locate each of these divisions. P. 21; 4.

188. Of what does the Appalachian Mountain system consist? Name the most important chains of this system. P. 21; 5.

189. Which is the largest mountain system in North America? What three great chains are in the United States? Name some of the highest peaks of the system. P. 21; 6.

190. Into what two portions is the plateau between the Rocky Mountains and the Sierra Nevada divided, and how? P. 21; 7.

191. Describe the Mississippi Valley. P. 21; 8.

192. What is said of the Mississippi River? What great tributaries has it? P. 24; 9.

193. Describe the drainage of the Atlantic Coast Plain. P. 24; 10.

194. Name the principal rivers flowing into the Pacific Ocean. P. 24; 11.

195. Which of the Great Lakes lies wholly within the United States? P. 24; 12.

196. What can you say of Great Salt Lake? P. 24; 13.

197. Describe the climate of the country. P. 24; 14.

198. Do the same for the rain-fall. P. 24; 15.

199. Describe, also, the vegetation. P. 24; 16, 17.

200. Name some of the animals and birds. P. 24; 18.

201. What is said of minerals? P. 24; 19.

202. How many inhabitants in the United States? Of this number, what per cent are Caucasians? P. 24; 20.

203. How many Ethiopians are in the country and in what section are they mostly found? P. 24; 21.

204. Of what nation are most of the Mongolian race in this country? What is their number? P. 24; 22.

205. How many Indians are there? P. 24; 23.

206. In what does the United States surpass all other nations? P. 24; 24.

207. Name the chief industry of the inhabitants. What renders the eastern half best adapted to this pursuit? What is carried on in the western part? P. 24; 25.

208. What do the cultivated crops embrace, and what are the chief products? P. 24; 26.

209. Where is manufacturing chiefly carried on? Name the principal manufactured articles. P. 24; 27.

210. What is said of mining? P. 25; 28.

211. Describe the foreign commerce. P. 25; 29.

212. What is the extent of the domestic commerce? Name the chief inland centers of trade. P. 25; 30.

213. What is said of the railroads? P. 25; 31. What is the estimated number of miles of navigable water? P. 25; 32.

214. What other means of transportation are employed? P. 25; 33.

215. Of what does the United States consist? P. 25; 34.

216. What power has the general Congress, and of what is it composed? P. 25; 35.



217. In whom is the executive function vested, and what are his duties? P. 25; 36.

218. Describe the judicial branch of the government. P. 26; 37.

219. What is the capital of the United States? What bodies hold their sessions here? P. 26; 38.

220. Describe the state governments. P. 26; 39.

221. Into how many and what sections may the states be divided? P. 26; 40.

222. What is said of Alaska? How is it separated from Asia? P. 26; 41.

223. Describe its surface. How high is Mt. St. Elias? P. 26; 42.

224. Name the principal river. P. 26; 43.

225. Describe the climate. Name the most valuable trees of Alaska. P. 26; 44.

226. Of what does the population consist? What are the chief occupations pursued? P. 26; 45.

227. From what islands do most of the world's seal-skins come? P. 26; 46.

228. What and where are the chief settlements? P. 26; 47.

229. Describe the system of surveys employed in the United States. P. 26; 1-4.

#### THE NEW ENGLAND STATES.

230. Describe the New England States, their location and extent. P. 27; 1.

231. What is said of the surface? P. 27; 2.

232. Describe the mountains. P. 27; 3.

233. What are the highest elevations? Name the loftiest peak of this range. P. 27; 4.

234. What is said of the rivers? P. 27; 5.

235. Name and describe some of the lakes. P. 27; 6.

236. Describe the climate. P. 27; 7.

237. Of what does the vegetation consist? P. 27; 8.

238. For what are the inhabitants noted? From what countries principally do the foreign-born citizens come? P. 27; 9.

239. What stones are quarried? P. 27; 10.

240. Name some of the agricultural productions. What other industries are pursued? P. 29; 11.

241. Mention some of the products of the manufacturing power of the section. P. 29; 12.

242. Describe the commerce. P. 29; 13.

243. Bound and describe Maine. Why has this state so many good harbors? Name the principal cities, and tell for what each is noted. P. 29; 14.

244. Bound New Hampshire. What is said of its surface? What is the principal industry? What and where is the capital? Name and describe the principal towns. P. 29; 15.

245. Locate and describe Vermont. Name the principal occupation and the farm products. Name and locate the capital. What are the chief towns? P. 29; 16.

246. Describe Massachusetts. How does it rank in manufactures? What is said of Boston? Name and describe the other principal cities. P. 30; 17, 18.

247. What is said of Rhode Island? What is the chief source of its wealth? Name its capitals and principal towns. P. 30; 19.

248. Describe Connecticut. What gives this state a leading rank in manufactures? What is the capital? For what is New Haven noted? P. 30; 20.

#### THE MIDDLE STATES.

249. Why were the Middle States so named? P. 32; 1.

250. Describe the surface. Where is the lowest depression? P. 32; 2.

251. Describe the part of the Atlantic Coast Plain in this division. P. 32; 3.

252. What river receives most of the drainage of New York? Into what bodies of water does the rest of the section drain? P. 32; 4.

253. Name the rivers of commercial importance. P. 32; 5.

254. Which of the Great Lakes border this division? P. 32; 6.

255. Describe the climate. Where is the rain-fall greatest? P. 32; 7.

256. Describe the vegetation. P. 32; 8.

257. How many inhabitants has this division, and where are they most numerous? P. 32; 9.

258. Tell what you know concerning the occupations of the population, and the results of the same. P. 32; 10.

259. Describe New York. Why is it called the Empire State? What is said of the metropolis? What is the capital? Name other cities of commercial importance. P. 33; 11-13.

260. Bound New Jersey. Describe the industries. Name and locate the capital. P. 33; 14, 15.

261. Describe Pennsylvania. Why is it called the Keystone State? How does it rank with regard to manufactures? Name the capital and principal cities. P. 33; 16, 17.

262. Bound Delaware. What are the industries? Name the chief towns. P. 33; 18.

263. For what are the climate and soil of Maryland best adapted? Name the capital and important cities. For what is Annapolis noted? P. 34; 19, 20.

264. What is said of the District of Columbia? P. 34; 21, 22.

265. Locate Virginia. What are the agricultural products? What is said of the mines? Name the capital and largest cities. P. 34; 23, 24.

266. Describe West Virginia. What kind of a surface has the state? Name and describe the capital and chief towns. P. 34; 25, 26.

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267. What lands does this section contain? P. 35; 1
268. What extent has it? P. 35; 1.
269. Describe the surface. How high is Black Dome? P. 35; 2.
270. What is the most important river of this section? What are the jetties? What is their use? Describe the lakes. P. 35; 3, 4.
271. Describe the climate and the rain-fall. P. 35; 5, 6.
272. What can you say of the vegetation? What minerals are mined? P. 35; 7, 8.
273. What is said of the population? P. 35; 9. Name the chief occupation and products. How much cotton does this section produce? P. 35; 10.
274. Bound and describe North Carolina. Name the capital and chief towns. P. 37; 11.
275. How large is South Carolina? Describe it. Name the capital and largest places. P. 37; 12.
276. What are the causes of Georgia's great wealth? What minerals are found? Name the capital. Mention some other important places. P. 37; 13.
277. Describe Florida. What is the capital? P. 37; 14.
278. Where is Tennessee? Describe it. Name the capital and largest towns. P. 37; 15.
279. Describe Alabama. Name the chief industries. Name the capital and the important towns. P. 37; 16.
280. What is the greatest height of Mississippi above the sea? What grains are raised? What is the capital? P. 39; 17.
281. What distinguishes Louisiana? What are the leading products? Describe New Orleans. Name the capital. P. 39; 18.
282. How large is Texas? Describe the climate. Name the chief pursuits. P. 39; 19.
283. What is the general surface of Arkansas? Name

the leading pursuits. The capital and principal towns. P. 39; 20.

284. Why was the Indian Territory organized? Name the more important tribes. What are the chief pursuits? What is said of the public land? P. 39; 21, 22.

### THE CENTRAL STATES EAST.

285. What is the position of this section? P. 41; 1.

286. Describe the surface. P. 41; 2, 3.

287. Name the rivers. What is said of the lakes of this division? P. 41; 4, 5.

288. Describe the climate. P. 41; 6.

289. Do the same for the vegetation. P. 43; 7.

290. Name the chief minerals. P. 43; 8.

291. What is the number of inhabitants in this section? P. 43; 9.

292. What occupation is the most important? Name some of the products. P. 43; 10.

293. What is said of livestock? P. 43; 11.

294. What are the principal manufactures? P. 43; 12.

295. What is said of the facilities for commercial enterprise? P. 43; 13.

296. Describe Ohio. In what does it excel? What are the industries of Cincinnati? Name the capital and other important places. P. 44; 14-16.

297. How large is Indiana? Describe it. Name the capital and principal towns. P. 44; 17.

298. Locate and describe Illinois. Name the industries, the capital, and important cities. P. 44; 18-20.

299. Describe Kentucky. Name the industries and the capital. P. 44; 21, 22.

300. In what respect do Iowa and Illinois resemble each other? What are the principal products? Locate and describe the capital. P. 45; 23.

301. Bound and describe Missouri. What are the princi-

pal products? Name the cities, and tell for what each is noted. P. 45; 24-26.

302. Describe Kansas. How large is the population? What important towns in the state? P. 45; 27.

303. Describe Nebraska. What is the chief occupation of the inhabitants? Name some of the towns in the state. P. 45; 28.

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304. Describe the general surface. P. 46; 2. What rivers and lakes in this section? P. 47; 3, 4.

305. What is the character of the climate? P. 47; 5.

306. What part of this division is covered with forests? Describe the rest of the vegetation. P. 47; 6.

307. Name the important minerals. P. 47; 7.

308. What is said of the population? P. 47; 8.

309. Name the chief occupations of the inhabitants. P. 47; 9.

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311. What is said of the soil of Wisconsin? Name the leading industries. What is the capital? P. 48; 12, 13.

312. What is said of the general surface of Minnesota? What industries are pursued? Name the capital and principal towns. P. 48; 14, 15.

313. How large is Dakota? Describe the industries. Name the chief towns. P. 48; 16.

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316. Name and describe the rivers and lakes. P. 49; 4, 5.

317. What can you say of the climate? P. 49; 6.

318. Describe the vegetation. P. 49; 7, 8.  
319. For what is this division noted? What is the amount of the production? P. 49; 9.  
320. Of what does the population consist? P. 49; 10.  
321. Name the leading occupations. P. 49; 11.  
322. What is the leading pursuit in Colorado? Name the capital and principal towns in the state. P. 49, 51; 12, 13.  
323. Describe New Mexico. What is the capital? What are the leading pursuits? P. 51; 14.  
324. What is said of mining in Arizona? Of agriculture? What towns in the state? P. 51; 15.  
325. Describe the agriculture and mining industries of Utah. Name the towns of importance. P. 51; 16.

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327. Describe the surface. P. 51; 2.  
328. To what river systems do the streams in this section belong? P. 51; 3.  
329. What is peculiar about some of the lakes? P. 51; 4.  
330. What can you say of the climate? P. 51; 5.  
331. Of what does the vegetation consist? P. 51; 6, 7.  
332. What minerals are found? What proportion of gold and coal does this section produce? P. 51; 8.  
333. Describe the population. P. 51; 9.  
334. Name the leading occupations. P. 51; 10.  
335. How large is Oregon? What is said of the minerals? Name and describe the important towns. P. 53; 11.  
336. Where is most of the population of Washington Territory? Describe the industries and locate the capital. P. 53; 12.  
337. Describe Idaho. What minerals are found? What important towns in the Territory? P. 53; 13.

338. What can you say of the soil and mines of Montana? How large is the state? What are the chief towns? P. 53; 14.

339. Wyoming Territory contains the sources of what great river systems? What is said of the National Park? P. 53; 15.

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340. What two states does this section include, and how great an area does it cover? P. 55; 1.

341. Describe the surface. P. 55; 2.

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343. Name the largest lakes. P. 55; 4.

344. Describe the climate. P. 55; 5.

345. What is said of the timber of the section? Describe the rest of the vegetation. P. 55; 6, 7.

346. What minerals are found? P. 55; 8.

347. What can you say of the inhabitants of this section? P. 56; 9.

348. How large is California? What are the chief pursuits? What do the manufactures of the state include? Name the capitals and important cities. P. 56; 10-14.

349. Describe Nevada. In what does the wealth of the state consist? Name the important towns of the state. P. 56; 15, 16.

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351. What three principal varieties of commercial articles exist? P. 57; 3.

352. What are routes of commerce? P. 57; 4, 5.

353. What qualities are necessary to a good road? P. 57; 6.

354. How many miles of railroad in the United States? P. 57; 7.



355. By what have the principal roads between the Atlantic Coast and the Mississippi River been determined? Name the principal lines east and west. P. 57; 9, 10.

356. How are these lines connected? P. 57; 11, 12.

357. By what routes is the Mississippi Valley connected with the Pacific Coast? P. 57; 13.

358. Name and describe the different standards of railroad time. P. 57; 14.

359. What are canals? Describe the mechanism of canals where the country through which they pass is not level. For what are they used? Name some of the most important. How many miles of canal are in this country? P. 57; 15-18.

360. What is said of rivers and lakes as carriers of merchandise? How many miles of navigable rivers in this country? P. 60; 19, 20.

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364. How large is the domestic commerce of the United States? Name some products of different parts of the country. P. 60; 27-33.

365. What is the amount of the foreign commerce? With what countries do we trade principally? What is the proportion of trade? Through what port does most of the foreign commerce of the United States pass? Name the exports. The imports. P. 60; 34.

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368. Describe the principal river systems. P. 61; 3.
369. What is said of the climate? Where is the rain-fall greatest? P. 61; 4.
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371. What animals are found in Canada? P. 61; 7.
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373. Name the principal occupations. P. 61; 10.
374. Describe the government of the Dominion. P. 61; 11, 12.
375. Bound Ontario. What are the leading occupations? Name the capital of the Dominion and of Ontario, and other principal towns. P. 63; 13, 14.
376. Describe Quebec and name the chief industries. What is the capital? P. 63; 15, 16.
377. What can you say of New Brunswick? What is the capital? P. 63; 17.
378. What kind of a surface has Nova Scotia? What is the chief occupation of the inhabitants? Describe Halifax. P. 63; 18.
379. Locate Prince Edward Island. Name its capital. P. 63; 19.
380. Describe Manitoba. How large is its population? Name the capital. P. 63; 20.
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387. Name the rivers and lakes. What two lakes are navigable? P. 64; 3.
388. Describe the climate. Into how many seasons is the year divided? How long does the wet season last? P. 64; 4.
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390. What minerals have been found in Mexico? P. 64; 6.
391. How many inhabitants has Mexico? Of what nations are they principally? Name the principal exports. P. 64; 7.
392. What kind of government has Mexico? Of how many states is it composed? P. 64; 8.
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**CENTRAL AMERICA.**

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396. What rivers and lakes abound? What is said of Lake Nicaragua? P. 66; 3.
397. Describe the climate, vegetation, and minerals. P. 66; 4.
398. How many inhabitants has Central America? P. 66; 5.
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413. What is said of the Plateau of Guyana? P. 67; 5.
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416. What can you say of the Amazonian system? P. 67; 8.
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420. Describe the climate of the continent. P. 69; 12.

421. Do the same for the vegetation. P. 69; 13.

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423. What is the vegetation of the llanos and pampas? P. 69; 15.

424. Name some of the minerals and tell from what countries they are obtained. P. 69; 16.

425. What animals are found? What is said of the llama and alpaca? P. 69; 17.

426. What is the number of inhabitants, and of what nations are they chiefly? P. 69; 18.

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428. How large is Brazil? Name the chief products and the principal industries. Name the most valuable minerals. What is said of the manufactures? Name the exports. Name the capital and principal cities. P. 70; 20, 21.

429. How is Guyana divided, and to what nations does it belong? Describe the climate and name the capital of each division. P. 70; 22, 23.

430. Describe Venezuela. What are the chief occupations? Name the capital and the principal towns. P. 70; 24, 25.

431. Describe Colombia. What goods are exported? Name the capital. P. 70; 26, 27.

432. Why was Ecuador so named? Describe the surface. Name the principal export. What is the capital? P. 70; 28.

433. Describe the surface, vegetation, and minerals of Peru. Name the capital and the principal exports. P. 70; 29, 30.

434. Describe Bolivia. Mention the exports. Name the capital and other towns of importance. P. 71; 31, 32.

435. What is the size of Chili? Describe the surface, vegetation, minerals, and climate. Name the capital. P. 71; 33.

436. Describe the surface, pasturage, and climate of the

Argentine Republic. Name the capital and larger towns. P. 71; 34.

437. Describe Uruguay. What is said of the country as to size? Mention the capital. P. 71; 35.

438. Name the occupations, exports, and capital of Paraguay. P. 71; 36.

### EUROPE.

439. Describe the position and boundaries of Europe. What is its size? P. 73; 1.

440. What is said of the outline? P. 73; 2.

441. Describe the surface. Where are the greatest elevations? P. 73; 3, 4.

442. Name the highest mountains. In what direction do they trend? P. 73; 5.

443. Name and describe other chains. What can you say of the Pyrenees? Of the Caucasus? Of the Ural Mountains? P. 73; 6-9.

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445. Describe the rivers. Name the largest rivers north of the main water-shed of Europe. Also those to the south. P. 73; 11-13.

446. Mention the largest lake. Where is the principal lake region of Europe? P. 73; 14.

447. Describe the climate of Europe. P. 74; 15-17.

448. What can you say of the vegetation? P. 74; 18.

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450. What is said of the animals? P. 74; 21.

451. What are the principal mineral productions of the grand division? P. 74; 22.

452. Describe the population. P. 74; 23.

453. How are the states of Europe divided? Name the six great powers. P. 74; 24.

454. How large is Russia? Describe the surface and the climate. Name the chief occupations and manufactures.

What minerals are found? Name the capital and principal cities. P. 75; 25-32.

455. What kingdoms occupy the Scandinavian peninsula? Describe the surface, climate, forests, and industries. What are the exports? Name the capitals and chief cities. P. 75; 33-39.

456. Of what do the British Isles consist? How large are they? Describe the surface, climate, and minerals. Name the imports of England; the exports; the colonial possessions. Of what does Parliament consist? Name the capitals and principal cities of England Scotland, and Ireland, and tell for what each is noted. Pp. 76, 77; 40-49.

457. Describe the population, surface, climate, and occupations of Belgium. Name the products. What are the exports? Name the capital. P. 77; 50-54.

458. Describe Holland. What are the leading exports? Name the principal possessions. Mention the capital and important towns. For what is Amsterdam noted? P. 77; 55-58.

459. What is the size of France? Describe the surface. What is said of the climate? Name the principal productions? The imports; the exports. Give the foreign possessions. Name and describe the capital and largest cities. P. 79; 59-64.

460. Describe the Iberian peninsula, the surface and productions. What are the principal minerals? P. 79; 65-69.

461. How much of the peninsula does Spain occupy? Describe the occupations. Name the imports and exports; the foreign possessions. Give the capital and important cities. P. 81; 70-72.

462. What can you say of the size of Portugal? Name the leading productions; the capital and chief sea-port. P. 81; 73-76.

463. Of what does Denmark consist? How large is it? Describe the surface. Name the chief pursuit. The imports; the exports; the capital. P. 81; 77-79.

464. Describe the surface, climate, rivers, agricultural productions, and minerals of Germany. What goods are imported? What are exported? Of what does the empire consist? What is said of education? Name and describe the capital and the chief cities and tell for what each is noted. Pp. 81, 82; 80-87.

465. How large is Austro-Hungary? Of what does it consist? Describe the surface; the rivers; the climate. What minerals abound? Name the manufactures. Of what does the population consist? Name and describe the principal cities of the empire. P. 82; 88-94.

466. How large is Switzerland? What can you say of the climate? To what nations do the people belong? Name the leading occupations and the capital. P. 82; 95-97.

467. How large is Italy? Describe the surface. What is said of the rivers? Of the climate? Name the occupations, the industries, and the products. Describe the cities. P. 82; 98-103.

468. Describe the climate of Turkey. Of what is the population composed? What is said of agriculture? P. 83; 104-108.

469. How large is European Turkey? What does the empire include? What are the principal manufactures? Name the cities. P. 83; 109-111.

470. What are the imports and exports of Rumania? Name the capital and the most important towns. P. 83; 112.

471. Describe Servia and Montenegro, and name the capital of each country. P. 83; 113, 114.

472. Where is Greece? What does it export? What is the capital? For what is it noted? Name the chief towns of the kingdom. P. 83; 115.

## ASIA.

473. Give the position of Asia. How large is it? P. 85; 1.

474. What islands are considered parts of Asia? P. 85; 2.  
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475. Describe the outline. P. 85; 3.
476. What can you say of the surface? Pp. 85, 86; 4-8.
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478. Name the largest rivers and tell into what they empty. P. 86; 10.
479. What is said of the lakes of Asia? P. 86; 11, 12.
480. Describe the climate. P. 86; 13-15.
481. Tell what you know of the vegetation. Name some grains and fruits native to Asia. P. 86; 16, 17.
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485. What is the proportion of Mongolians; of Caucasians; of Malays? P. 87; 22.
486. How may Asia be divided politically? P. 87; 23.
487. What do the Russian possessions embrace? How large an area is this? P. 87; 24.
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489. What is said of the rivers? P. 87; 26.
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492. What minerals are mined? What goods are exported? P. 87; 29.
493. What is said of the population? P. 87; 30.
494. Name the capital and the chief towns. P. 87; 31.
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496. What kind of government has China? Of what does the empire consist? P. 87; 33.
497. Describe the surface and drainage of Mongolia and East Turkistan. P. 87; 34.
498. What is said of the inhabitants? Name the chief towns. P. 87; 35.

499. Describe Thibet. What are the occupations of the people? Mention the principal exports. Name the chief town. P. 87; 36, 37.

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502. Describe the surface of China. Name the chief industry. What are the principal crops? What fruits are raised? Name the principal manufactures of this country. What is said of education? Into how many provinces is China divided? Name the chief towns. Which city belongs to Great Britain? Which to Portugal? P. 88; 40-48.

503. What does Japan include? How large is it? What is the population? Name the principal manufactures. What are the exports? Describe the government. Mention the capital and chief cities. P. 89; 49-52.

504. How large is Farther India? What states and settlements does this country include? Describe it. What are the principal minerals? Name the chief cities. P. 89; 53-57.

505. Name the largest islands of the Malay Archipelago. What is said of the surface and the climate? What is said of minerals? What is the population? What nations have interests in these islands? Name the principal ports. P. 89; 58-61.

506. How large is India? What is said of the climate; of the vegetation? Give the capital and chief towns. Pp. 89, 90; 62-68.

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508. Describe Afghanistan, Beloochistan, and Turkistan. P. 90; 70-73.

509. How is Persia situated? Mention the productions. Name the capital and principal towns. Pp. 90, 91; 74-77.

510. Of what does Asiatic Turkey consist? Describe it. Name the most important cities. P. 91; 78-82.

511. What is peculiar in the surface of Palestine? Tell what you know of this country. P. 91; 83.

512. Describe Arabia. Name the capital. To whom does Aden belong? P. 91; 84-86.

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513. What is the extent of Africa? P. 93; 1.

514. What is its area? P. 93; 2.

515. Describe the surface. Mention the most prominent mountain peaks and ranges. P. 93; 3, 4.

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518. What is said of the heat of Africa? In what regions is the greatest fall of rain? P. 94; 7-9.

519. What is the vegetation in the desert region; in the north-west? P. 94; 10-12.

520. Name the principal wild animals; domestic animals. P. 94; 13, 14.

521. Name the principal minerals. P. 94; 15.

522. How many inhabitants has Africa? To what races do they belong? P. 94; 16, 17.

523. Into how many divisions is Africa divided? P. 94; 18.

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527. What can you say of the vegetation of Tripoli? Name the capital, and the chief town of Fezzan. P. 94; 22.

528. What does the Dominion of the Khedive embrace? What is said of its independence? P. 94; 23.

529. Describe the surface of Egypt and Nubia. The soil

and climate. Name the products. What are the exports? What is said of the Suez Canal? Name the capital and the principal towns. Pp. 94, 95; 24-27.

530. What is said of the Sahara? P. 95; 28.

531. Where is the Soudan? Describe the surface. What is said of the people? P. 95; 29.

532. Tell what you know of Senegambia. P. 95; 30.

533. What kind of government has Liberia? Name the capital and the principal productions. P. 95; 31.

534. Mention the chief exports from Upper Guinea. Name the chief town. P. 95; 32.

535. Describe the interior states of the Soudan. Name the chief towns. P. 95; 33.

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538. Describe Angola and Mozambique. Mention the productions and the capital of each country. P. 95; 36.

539. What is said of the government of Zanzibar? Name the exports. What is the capital? P. 95; 37.

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543. What is said of the inhabitants of the Orange River Republic? Mention the capital. P. 96; 42.

544. By whom is Transvaal chiefly settled? Name the products and the capital. P. 96; 43.

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546. What can you say of other islands of Africa? P. 96; 45-48.

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550. What is said of the lakes? Name two of the largest. P. 96; 4.
551. How is the climate of the division modified? Why is the rain-fall slight? P. 96; 6.
552. What is the cause of the hot winds which fall upon the coasts at intervals? P. 96; 7.
553. Describe the vegetation of the continent. P. 98; 8.
554. Name some of the plants. P. 98; 9. What is said of the animals of Australia? P. 98; 10.
555. Name some of the birds and reptiles. P. 98; 11, 12.
556. What is said of the domestic animals? P. 98; 13.
557. Tell what you know of the minerals of Australia. P. 98; 14.
558. How large is the population? What is said of it? P. 99; 15.
559. To whom does Australia belong, and into how many colonies is it divided? P. 99; 16.
560. What is said of the size of Victoria? Name the chief occupation. Mention the cities. P. 99; 17.
561. What minerals are found in New South Wales? Name the capital. P. 99; 18.
562. Where is South Australia mostly settled? Name the capital. P. 99; 19.
563. Name the fruits raised in Queensland. What is the capital? P. 99; 20.
564. What is said of the size and importance of West Australia? P. 99; 21.
565. How large is Tasmania? How far from Australia is it? Describe the surface and name the chief occupations and the exports. P. 99; 22.

566. How many islands comprise New Zealand? Describe the surface and climate. What are the chief exports? Name the largest towns and the capital. P. 99; 23, 24.

567. Of how many islands are the Fijis composed? Describe them. To whom do they belong? P. 99; 25.

568. Where are the New Hebrides? What is said of the vegetation, and of the inhabitants? P. 99; 26.

569. To whom do the Loyalty Islands belong? P. 99; 27.

570. Describe the surface of the Solomon Islands. P. 99; 28.

571. Describe the Caroline Islands. P. 99; 29. Name and describe other islands in the Pacific. P. 99; 30.

572. Of how many islands are the Sandwich Islands composed? Describe the surface. What is said of agriculture? Name the principal export. Describe the capital of the kingdom. P. 99; 31.

NOTE.—For a course in Map-drawing, see page 101, where this subject is fully explained.

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## UNITED STATES HISTORY.

The references found in the questions on this topic point to the *ECLECTIC HISTORY OF THE UNITED STATES*, by M. E. Thalheimer, recently published by Van Antwerp, Bragg & Co., Cincinnati and New York.

Numerals, unless otherwise explained, refer to articles.

### PART I.—DISCOVERIES AND SETTLEMENTS.

1. Describe America as it was four hundred years ago. Who were the inhabitants, and where were they mostly found? 1.

2. Why are the aborigines called “The Mound Builders?” What were their employments? Where are their works mostly found? Describe some of their most prominent ones. 2.

3. What remains of their manufactures have been found? 2.

4. What is known of the history of the mound builders? What probably became of them? 4.

5. Whence came they? What traditions and facts throw light on their origin? 5.

6. When and by whom was North America discovered? 6.

7. Describe Lief's expedition and discovery. 7.

8. What is said of White-Man's Land and Great Ireland? 8.

9. What famous sea-king reconnoitered the bays and harbors of New England? What trade was carried on between the Icelanders and the natives? 9.

10. What was the result of this intercourse? 10.

11. What are the principal physical features of the North American continent? 12 and 13.

12. What are the productions of the elevations west of the Sierra Nevada? 14.

13. Describe the Great Interior Basin, its rivers, lakes, productions, and inhabitants. 15.

14. What four rivers rise in the mountains north-east of the Great Basin, in what direction do they flow, and where do they empty? 16.

15. Describe the Mississippi Valley. 17.

16. What five great lakes lie north-eastward from the central valley, and what are their advantages to the country? 18.

17. Describe the cataract of Niagara. 18.

18. How may the lands of the United States be divided with reference to the uses of man? 19.

19. Before cultivation was introduced, what resources did these regions furnish for the sustenance of man? 20.

20. In what respects were the river tribes superior to those of the interior? 21.

21. What labors were required of the Indian women? 21.

22. Describe the employments, houses, and domestic habits of the village Indians of the far south-west. 22.

23. Into what families or tribes were the Indians east and west of the Mississippi, respectively, divided? 23.

24. What tribe excelled all the other northern Indians in war, government, and agriculture? 24.

25. Into what clans were these tribes grouped? 25.

26. What was their form of government, and what were their chief officers called? 25.

27. What were the religious views, practices, and hopes of the aborigines? 26.

28. Describe their dancing, music, and literature. 27.

29. Describe their social customs and habits; also, their appearance and character. 28 and 29.

30. By what means were many of them destroyed? 29.

31. What distinguished the fifteenth century as a great age in Europe? 30.

32. Who first *acted* on the belief that the earth was a globe instead of an oblong plain? What did he determine to do, and what was his success? 31.

33. Describe the first voyage of Columbus, and his discoveries. 32-34.

34. How was he received on his return to Spain? 35.

35. What mistakes were made by many of the people as to the benefits of the discoveries of Columbus? 35.

36. What were the results of his three subsequent voyages? When did he die? Who gave the name to the New World? 36.

37. What efforts were made by the English to obtain possession of the New World? 37.

38. What discoveries were made by the Portuguese, and by what navigators? 38.

39. What further efforts were made by the Spaniards, particularly by Diego Columbus, and Ponce de Leon? What was the motive of the latter, and what was effected by Nunez de Balboa? 39.



40. What was the course and conduct of Vasquez de Ayllon? What conquests were made under Cortez? 40.

41. Describe the expedition of Narvaez, and of his countryman, Hernando de Soto. 41.

42. What part of the country was explored by Coronado? Of what was he in search? What was the result? 42.

43. Who first visited the banks of Newfoundland? Who, the harbors of New York and Newport, and who, the Gulf of St. Lawrence above the sites of Quebec and Montreal? 43.

44. Describe the expedition of Admiral Coligny, and its results. 44.

45. What was done by the French under Captain Laudonnière? 45.

46. What was the course pursued by Pedro Menendez? What city did he found? What massacre did he commit, and how did he excuse himself? Who took revenge, and how? 46.

47. What were the movements of the French in Canada, and particularly of Samuel de Champlain? 47.

48. Describe the efforts made by the Spaniards in the south-west, and their results. 48.

49. Who were the rival claimants for America? 49.

50. What account can you give of the explorations respectively, of Frobisher, Davis, and Drake? 50.

51. What success attended the efforts of Sir Humphrey Gilbert and Sir Walter Raleigh? 51.

52. Who gave the name to Virginia, and why? How did the first effort to colonize it succeed? 52.

53. When was the second colony sent out, and what became of it? 53.

54. What were the results of Raleigh's efforts to himself and the country? 54.

55. What two colonial companies were chartered by James I., and on what conditions? 55.

56. Describe the first colony sent out by the London Company, and the treatment of Captain John Smith. 56.

57. When and by whom was Jamestown first settled? 57.

58. What was Smith's policy in managing the people? What explorations did he make? 58.

59. What compelled Smith to leave the colony? What was the result? 59.

60. What brought a new era for Virginia? What became the chief product of the soil, and the medium of exchange? What was the result of this policy? 60.

61. Describe the new laws sent out by the company. 61.

62. When and how were wives and slaves brought into the colony? 62.

63. Describe the Council of Burgesses, its power, and the time of its first meeting. 63.

64. Describe the Indian war that broke out in March, 1622, and its results. 64.

65. What changes did the king introduce in 1624? 65.

66. Describe the condition of Virginia at this time in regard to population and education. 66.

67. What privileges were taken from the people, and what was the character of Governor Berkeley's administration? 67.

68. What occasioned Bacon's rebellion? How did it result in regard to the Indians and Berkeley himself? 68.

69. How came Jamestown to be burned? What became of Bacon? How did Berkeley disgrace himself, and who became governor in his place? 69.

70. Describe the founding of the Colony of Maryland. 70.

71. Who resisted the jurisdiction of Maryland after Lord Baltimore's death? 71.

72. Describe Clayborne's rebellion. 72.

73. What classes flocked to Maryland, and why? When was the charter revoked, and their lands returned to the Calvert family? 73.

74. What religious differences prevailed in England about this time? 74.

75. What course did the Puritans take? 75.

76. What troubled the Separatists in Holland, and what remedy did they apply? 76.

77. How was the patent secured from the London Company rendered useless? 77.

78. Where did the Pilgrims land? What compact did they adopt before landing? Who was chosen first governor? 78.

79. What was their first winter's experience? 79.

80. What was the challenge sent by the Narragansetts, and what was returned? 80.

81. How did the colonists prosper? 81.

82. Who was chiefly instrumental in the settlement of what is now Maine and New Hampshire? When did the people, by vote, annex themselves to Massachusetts Bay? 82.

83. What circumstances made the country difficult of settlement? When and by whom was the first court duly organized on the soil of Maine? Whence came the name of Acadia, given to the southern part of this territory? 83.

84. What circumstances attended the settlement of Salem Colony? Who were the people, and who was their first governor? 84.

85. When was the first considerable addition made to the population? What privileges did the royal charter confer, and who was their chosen leader for twenty years? 85.

86. Describe the towns about Boston at this time in respect to population, education, and political rights. 86.

87. Where and how was Harvard College established? Whence its name and its first endowment? 87.

88. What induced the settlement of the Connecticut Valley, and what trade did the settlers soon commence? 88.

89. Describe the settlement of New Haven and the other towns along the sound. 89.

90. What religious opinions and practices prevailed among the people and officers of Massachusetts Bay? 90 and 91.

91. For what was Roger Williams exiled from the colony, and where did he settle? 92.

92. What led to the settlement of Rhode Island? 93.

93. Describe the Pequod war and the part that Roger Williams bore in it. 94 and 95.

94. Who joined in forming the first written constitution ever framed in America? When was this done? When did Massachusetts follow this example? 96.

95. What colonies united, in 1643, as the "United Colonies of New England?" How long did the league last? Why were Rhode Island and Providence not admitted? 97.

96. Describe the charter which Roger Williams obtained from Parliament for the plantations on Narragansett Bay. How did it operate practically? 98.

97. How were the Friends, or Quakers, persecuted by the government of Boston? 99.

98. Describe John Eliot's labors in behalf of the Indians. 100 and 101.

99. What occasioned King Philip's War? How did the English treat the praying Indians? Who resisted the popular fury against them? 102.

100. What was the result to the Indians, King Philip particularly? 103.

101. Who first navigated the Hudson River, and with what motive? 104.

102. What discoveries were made by Adrian Block five years after those of Hudson? 105.

103. What trade sprang up at New Amsterdam and Albany? 106.

104. What inducements were presented to all persons to settle in the territory controlled by the Dutch? 107.

105. What sort of relations existed between the Dutch and English? 108.

106. When and where were the first settlements of Swedes and Finns made? 109.

107. What territory was named New Sweden, and what drew to it many people from the frozen shores of the Baltic? 110.

108. What contributed greatly to make trouble with the Indians near New Amsterdam? 111.

109. What policy was pursued by Governor Stuyvesant? 112.

110. How did New Sweden come to an end? 113.

111. What created discontent in the Dutch colony? 114.

112. When was the conquest of New Netherlands effected, and by whom? 115.

113. Describe the settlement of New Jersey. Whence its name? What made it successful? 116.

114. Describe the re-conquest of New York by the Dutch, and its recession, permanently, after being held only fifteen months, to the English. 117.

115. How did the English Quakers obtain a footing on the eastern bank of the Delaware? 118.

116. How did William Penn obtain possession of Pennsylvania? What policy did he pursue in governing it? 119.

117. How did Penn possess the site of Philadelphia? How did it progress? 120.

118. What induced great numbers of people to come from Great Britain to Pennsylvania? 121.

119. What was the history of Delaware about this time? 122.

120. How did the settlers show their ingratitude to Penn? 123 and 124.

121. What difficulties did Charles I. find in governing his subjects? 125.

122. What was the result of the civil war in England to Charles, to Parliament, and to America? 126.

123. What was done by Oliver Cromwell? 127.

124. Who succeeded him, and with what result to the English nation? 127.

125. When was Charles II. called to the throne? What were his character and policy as king? How did he attempt to regulate commerce, and what were the effects? 128.

126. What conflicting grants did he make? 129.

127. What grand system was adopted for the settlement and government of the South? 130.

128. What was the result of this scheme? 131.

129. Describe North Carolina, its governor, and his policy. 132.

130. Describe the settlement of South Carolina. 133.

131. What attracted the French colonists? 134.

132. What, in this colony, were the principal productions, and what rendered the importation of negroes in greater numbers necessary? 135.

133. What treatment did the Monmouth rebels receive at the hands of James the Second? 136.

134. What led to the emigration of the Covenanters of Scotland to New Jersey? 137.

135. What led to the appointment of Governor Andros, and what was his public policy? 138.

136. What became of the charters of Rhode Island and Connecticut? 139.

## PART II.—GROWTH OF THE COLONIES.

1. Who succeeded James II. on the throne of England? How did this change affect the people of New England? 140.

2. Describe the Salem witchcraft, and give its results. 141 and 142. What led to the death of Leisler? 143.

3. What three important principles were settled by the English revolution? 144.

4. What was the Board of Trade and its object? 145.

5. What plans of union were proposed at this time for the benefit of the colonies? 146.

6. Describe the Mercantile System. 147.

7. What practical interest in the slave trade did the English exhibit? 148.

8. What was the condition of education and literature at the beginning of the eighteenth century? 149.

9. What was General Oglethorpe's position, policy, and course in the colonies? 150.

10. When and how was Georgia organized and settled? 151.

11. What was Oglethorpe's policy with respect to slavery and rum? What distinguished minister favored the former? 152.

12. What did Spain claim? When was war declared? 153.

13. What was Oglethorpe's course, and what was attempted by Spain? 153.

14. In what respect was Georgia a failure, and why? What was the final result? 154.

15. What French settlements had been made in the meantime by the missionaries, traders, and soldiers, and especially by the Franciscan and Jesuit Fathers? 155.

16. Describe Father Marquette's expedition. 156.

17. What course did the fur-traders pursue with the Indians? 157.

18. What was La Salle's scheme? What territory did he include under the name Louisiana? What efforts did he make to attain his object? 158.

19. What did the French attempt in Texas? How did it result? What became of La Salle? 159.

20. What did they succeed in doing in Mississippi and Alabama? 160.

21. What was the result of the reign of Louis XIV. on the finances of the nation? What was done under his successor, Louis XV., to replenish the French treasury? 161.

22. What was the result of Law's scheme? 162.

23. Describe the attempt of the Natchez Indians and its result to themselves and others. 163.

24. Describe the population and exports of New Orleans in 1723. 164.

25. By what forts did the French guard their American possessions? 165.

26. Describe the wars between the English under William III., and the French under Louis XIV. of France. 166 and 167.

27. What happened to Schenectady in 1690? What was the state of things generally about this time? 168.

28. What was done by the northern colonies to remedy this state of affairs? 169.

29. What was the result of Queen Anne's war, both in Europe and this country? 170.

30. What was effected by Governor Moore, of South Carolina, in retaliation? 171.

31. What was attempted by the Tuscaroras, and with what result? 172.

32. What happened in Maine, and particularly in Father Rasles' settlement? 173.

33. Describe the new war which now broke out in Florida and Georgia; also, the expedition of the English to conquer Mexico and the Spanish West Indies. 174.

34. Describe King George's war, and its results. 175.

35. What efforts were made to drive the French from the Ohio Valley? Who was sent in command of the expedition, and what was the result? 176 and 177.

36. What was done to unite the colonies for the common defense? Why did it fail? 178.

37. How did the regular British officers regard the American or colonial troops? 179.

38. When and how did Braddock's defeat occur? 180.

39. What three other expeditions were undertaken in the summer of 1755? 181 and 182.

40. What disasters occurred to the English in the next two years? How were the Indians punished? 183.

41. What happened at Fort William Henry? 184.

42. What proportion of all North America was now owned by France, England, and Spain, respectively? 185.

43. What great disaster befell the English in July, 1758? How did it occur? 186 and 187.



44. Who conquered Forts Frontenac and Du Quesne? 188.
45. What other important conquests were made the same year by the combined forces of Old and New England? 189.
46. What were the principal circumstances attending the capture of Quebec? 190-192.
47. How did the attempt of the French to recapture Quebec the next year result? When was Montreal taken? What disposition did the Treaty of Paris make of American territory? 193.
48. Describe the Pontiac Conspiracy and its results. 194.
49. What was the first book written in America? What other literary works soon followed? 195-197.
50. Who were the prominent ministers of New England? What was their influence and learning? 198.
51. Who were the historians of this period? 199.
52. How did Yale College originate? 200.
53. How and by whom was the college of William and Mary founded? 201.
54. What other colleges were founded during the second colonial period? 201.
55. What is said of Jonathan Edwards? 202.
56. What place did Benjamin Franklin fill in the public affairs of his day? 203-205.
57. What was the state of science? 206.
58. Describe John Woolman and his efforts. 207.
59. What may be regarded as the most valuable part of American literature at this time? 208.
60. Describe the colonial habits in regard to food, clothing, and furniture. 209.
61. Describe the mode of address and the punishments then prevalent. 210.
62. What was the condition of the roads, and what were the most common modes of conveyance? 211.
63. What were the principal articles then manufactured? 212.

64. Describe the commerce of this period and the difficulties it had to contend with. 213.

65. What was the character, mental and moral, of the men appointed to office by England generally? 214.

### PART III.—WAR OF INDEPENDENCE.

1. What predictions did the French make in respect to the English in America? 215.

2. How was the plan to tax the colonies received? On what principle was it resisted? 215–217.

3. Why did the French and English differ so much in this regard? 218.

4. What can you say of the character and principles of George III.? 219.

5. Describe the “Stamp Act” and its reception. 220 and 221.

6. After its repeal what was done in the way of taxation? 222.

7. What was done to the soldiers that fired upon the people, killing several? 222.

8. What led to the settlement of Tennessee? 223.

9. What oppressive laws were imposed upon the people by Parliament? 224.

10. What was done to prevent smuggling in Rhode Island? What became of the Gaspée? 225 and 226.

11. Why was the tax on tea so obnoxious? What was done in opposition to it? 227 and 228.

12. What was done by the House of Burgesses in Virginia? What other forms of sympathy with Massachusetts did the people manifest? 229.

13. Describe the First Continental Congress. Where did it meet, and who composed it? 230.

14. What measures were adopted by the people expressive of their determinations? 231.

15. When and where was the first blood of the Revolution shed? 232.
16. What was the result? 233.
17. Describe the condition of things when the Second Continental Congress met. 234.
18. What measures were adopted by this body? 235.
19. Between what real parties was the contest begun and carried on? 236.
20. Describe the capture of Ticonderoga and Crown Point. 237.
21. What three British generals soon became well known in America? 238.
22. Describe the battle of Bunker Hill. 239 and 240.
23. What measures did Washington adopt? Describe the forces under him. 241.
24. What resolutions were passed at Mecklenburg? 242.
25. What men were prominent in the settlement of Kentucky? What were their views of independence? 243.
26. What allies did England secure to crush the rebellion? At what rate were the mercenaries bought? 244.
27. What plan was adopted for the invasion of Canada, and for what purpose? 245.
28. Describe the march of Montgomery and Arnold to Quebec; also, the assault and its failure. 246 and 247.
29. Why was Boston evacuated by the British? 248.
30. Describe the siege of Charleston and the repulse of the British. 249.
31. When and by whom was the separation from Great Britain first declared? 250.
32. How was the Declaration of Independence received by the people? 251.
33. How did the British and American forces compare at this time? 252.
34. Describe the battle of Long Island. 253.
35. What were Washington's movements in this emergency? 254.

36. Who was Captain Nathan Hale, and what became of him? 255.

37. Describe the capture of Fort Washington. 256.

38. What became of General Lee? 257.

39. How did Washington escape from Cornwallis? 258.

40. Describe the battle of Trenton. 259.

41. What extraordinary powers were conferred on Washington? What were the consequences of the battle of Princeton? 260.

42. What distinguished foreigners now appeared and offered their aid? 261.

43. What two great movements were planned by the British for the campaign of 1777? 262.

44. Describe the battles of Brandywine and Germantown. 263.

45. What led to the battle of Bennington, and what was its result? 264.

46. By whom was the first battle of Saratoga fought, and what was its result? 265.

47. Describe the surrender of Burgoyne. 266.

48. Describe the state of things in the winter-quarters of Washington during the following winter. 267 and 268.

49. What distinguished Prussian officer came about this time to assist the Americans? 269.

50. How and why did the French now give material aid to the Americans? 270.

51. What change now took place in England with respect to the war? What prominent men argued against its continuance? What propositions were made by the English? How were they received? 271.

52. Describe the battle of Monmouth. 272.

53. What forces were combined for an attack on Newport? Why did it fail? 273.

54. Describe the massacre of Wyoming. 274.

55. What parties committed similar outrages in New York? 275.

56. How and when were these cruelties revenged? 276.
57. By whom was Colonel Clark sent out, and for what? What did he accomplish? 277 and 278.
58. What settlements were captured for the United States during 1778? Who held the remainder? 279.
59. Describe the war in the South during 1779-1781. 280 and 281.
60. Who recaptured Stony Point and Paulus Hook? 282.
61. What, in the meantime, was accomplished by the navy, and especially by Paul Jones? 283.
62. What was the winter of 1779-'80 compared with the previous one? 284.
63. Describe the attack on Savannah and Charleston respectively, and their results. 285.
64. How was the war carried on by Sumter, Marion, and Pickens, and the women of the South? 286.
65. Describe the interview between Marion and the British officer, and its result. 287.
66. Describe the operations of Gates and Green respectively, and the condition of things when the latter took command. 288.
67. Describe the battle of the Cowpens. 289.
68. How was Cornwallis defeated in his chase of the little American army? 290.
69. By whom were the Southern States regained? 291.
70. Describe the character of Benedict Arnold. 292.
71. What induced Arnold to turn traitor? What was his plan? 293.
72. How and by whom was André captured? 294.
73. What became of André and of Arnold? 295.
74. What about this time was the greatest danger to the American cause? 296.
75. What caused the revolt among the Pennsylvania troops? How did Clinton interfere, and what did he propose? What was the result? 297.

76. On what condition did Maryland propose to join the rest of the States in a closer confederation? What made the difficulty here? How was it met and overcome? 298.

77. Why was Spain so bitterly opposed to the independence of the United States? 299.

78. What was the first foreign power to salute the flag of the United States? What became of St. Eustatius? 300.

79. By whose influence was an armed neutrality proclaimed? What was its effect on American affairs? 301.

80. Where did Cornwallis entrench himself, and by whom was his army soon surrounded? Describe the siege of Yorktown. 302, 303.

81. Describe the surrender of Cornwallis. 304.

82. What was the effect of this victory, both in this country and England? 305.

83. Who was appointed to supersede Clinton in New York? How did Carleton's character and policy differ from those of Clinton? 306.

84. When and where were the preliminaries of peace signed? When did Washington disband his army? 307.

85. Describe the departure of the British soldiers; Washington's taking leave of his army, and his resignation to Congress. 308.

#### PART IV.—GROWTH OF THE UNITED STATES.

1. What difficulties and dangers attended the coming of peace? What did Washington do to meet these troubles? 309 and 310.

2. What policy was pursued to pacify the Indians? What has interfered with its success? 311 and 312.

3. What measures were proposed to strengthen the Union? Describe the Constituent Convention. 313-315.

4. What were the principal differences of opinion which showed themselves in the convention? 316.

5. Describe the principal features of the Constitution of the United States. 317.

6. What opinions have been expressed by Gladstone and Washington in regard to the Constitution? 318.

7. What were the circumstances attending its adoption and the election of the first President and Vice-President? 319.

8. Describe Washington's inauguration. 320.

9. Who composed Washington's first Cabinet? 321.

10. What resolution was adopted in regard to the redemption of the Continental paper? 322.

11. What measures were taken to establish the Capital and a National Bank? 323.

12. What were the six main provisions of the law enacted for the North-west Territory? 324.

13. What was done toward the settlement of that vast territory, and who was the first governor thereof? 325.

14. What was attempted, and ultimately accomplished, to restrain the Indians? 326.

15. Describe the Whisky Rebellion. 327.

16. What was the effect of the French Revolution on the American people? 328 and 329.

17. What matters of dispute still existed between England and the United States? 330.

18. Describe Jay's Treaty and the difficulties connected with it? 331.

19. What was attempted by Citizen Genet, from France? How was it regarded by the people? 332.

20. Into what two great political parties were the people now divided? 333.

21. What advantages were now secured by a treaty with Spain? 334.

22. What treaty was made with Algiers to secure our shipping from its piracy? 335.

23. What three states were organized and admitted into the Union during Washington's two terms? 335.

24. What measures did Washington recommend at the close of his administration? 336.

25. What was his plea for union? 337.

26. What was the cause of Washington's ceremonious manners as president? 338.

27. What were the results of Washington's administration? 339.

28. Who were the second President and Vice-president, and what parties did each represent? 340.

29. What were the Alien and Sedition laws, and what led to their enactment? 341 and 342.

30. What difficulties arose between France and the United States? What measures were taken to meet and remedy them? 343 and 344.

31. How were they settled? 345.

32. How was the death of Washington regarded at home and abroad? 346.

33. When was the Government moved to Washington, and what was the condition of that city? 347.

34. How was cotton made available as one of the great products of the country? 348.

35. Who were the third President and Vice-president, and how were they elected? 349.

36. What were the main principles of the Democratic party at this time? 350.

37. What can you say of Jefferson's principles, and of his style and demeanor as President? 351 and 352.

38. What report did his Secretary of the Treasury make with respect to his predecessor, Hamilton? 353.

39. What was the Indian policy adopted? 354.

40. What was the greatest event of Jefferson's administration? 355.

41. What was the price paid for the Territory of Louisiana, and whence came the money? 356.

42. Describe the expedition of Lewis and Clark to the North-west. 357.



43. When was the Territory of Orleans organized? What was the remainder of the purchase called? 358.

44. By what means was Tripoli brought to terms? 359.

45. What aroused the nation to the evil of dueling? 360.

46. Who was chosen Vice-president when Jefferson was re-elected? What became of Aaron Burr? 361.

47. Describe Fulton's efforts in applying steam to the propulsion of vessels. 362.

48. How did the war between France and England affect commerce and trade? 363.

49. Describe and Embargo Act and its effect. How long did it continue? 364.

50. When was Ohio admitted to the Union, and where was her first permanent settlement made? 365.

51. Who succeeded Jefferson as president? 366.

52. What causes led to the war of 1812? 367 and 368.

53. Describe Hull's march and surrender. 369 and 370.

54. What was accomplished by the attempted invasion of Canada? 371.

55. What naval victories compensated for the losses on land? 372 and 373.

56. Describe the campaign of 1813. 374 and 375.

57. What was General Harrison's course? 376.

58. How was the National honor maintained? 377.

59. What victories were obtained by Commodore Lawrence? How was he killed? 378.

60. What other naval victories were obtained in this war by Porter and Perry on the lakes? 379-382.

61. What did Harrison accomplish? 383.

62. What outrages were committed by the southern Indians, and how were they punished? 384.

63. Describe the burning of Washington. 385.

64. How was Baltimore treated by the British marauder, Admiral Cockburn? 386.

65. How did New England suffer, and what took place at Oswego and Chippewa? 387.

66. Describe the battle of Lundy's Lane. 388.
67. What attempts were made by the British? 389.
68. What encouraged the British to continue the war, and what was their next great movement? 390.
69. Describe the battle of Plattsburgh. 391.
70. What was the object and result of the Hartford Convention? 392.
71. Describe the Treaty of Ghent and the battle of New Orleans. 393-395.
72. How was the news of peace received by the people? 396.
73. What were the object and result of Commodore Decatur's expedition against the Barbary States? 397.
74. What led to the adoption of the American system of revenue? 398.
75. When was Indiana made a state? 399.
76. Who was the fifth President, and what was the character of his administration? 400.
77. What was the state of things with regard to slavery at this time? 401.
78. What led to the adoption of the Missouri Compromise, and who was its chief advocate? 402.
79. What were the chief events of 1819? 403.
80. What was the "Monroe Doctrine?" 404.
81. Describe the visit of LaFayette in 1824. 405.
82. When and to what place were the Indians removed? 406.
83. Which tribe was the most civilized? Describe it. 407.
84. How would the Creeks compare with the Cherokees? 408.
85. Who became the sixth President? 409.
86. What was the character of President Adams? 410.
87. What public improvements were now coming into use? 411.
88. When and where was steam first used on railroads in the United States? 412.

89. In connection with what great event did the elder Adams and Jefferson die? 413.

90. Who was chosen to succeed Adams? 414.

91. What sweeping measure characterized the very commencement of President Jackson's administration? 415.

92. What questions excited violent debates in Congress about this time? 416.

93. Why did certain Southern states threaten to secede about this time? How was this avoided? 417.

94. What Indian disturbances occurred under this administration? How were they quelled? 418.

95. Describe the Seminole war. 419 and 420.

96. What did Jackson do in relation to the National Bank? 421.

97. What was the effect of distributing the public money among eighty-nine banks? 422.

98. What was done with the surplus public funds? 423.

99. What was the effect of the President's specie circular? 424.

100. What trouble arose with France? How was a conflict avoided? 425.

101. Who was chosen in 1836 as President? What States were admitted that year? 426.

102. What was the state of public affairs when President Van Buren began his term of office? 427.

103. Describe the commercial disasters of that time. 428.

104. What befell the Bank of the United States, chartered by Pennsylvania? What states failed to pay their debts? 429.

105. Describe the Sub-treasury Bill and what became of it. 430.

106. What caused the rebellion of Canada against Great Britain in 1837? How was it quelled? 431.

107. Describe the presidential campaign of 1840. 432 and 433.

108. How long did Harrison act as President? When did he die? Who then became President? 434.

109. What was Tyler's course in relation to a National Bank? 435.

110. What questions were settled by the Webster and Ashburton Treaty? 436.

111. Dorr's Rebellion aimed at what? How was it put down? Which party prevailed? 437.

112. What is said of the Mormons? 438 and 439.

113. What was the most exciting question of Tyler's administration? How was it disposed of? 440.

114. What were the objections to the annexation of Texas? Which party favored it? 441.

115. When and how was the electro-magnetic telegraph introduced? Who invented it? 442.

116. Who was elected the eleventh President? When, where, and by whom was Astoria founded? 443.

117. What excitement arose in regard to the northern boundary of Oregon? How was it settled? 444.

118. What war grew out of the claims in respect to the south-western boundary? 445-447.

119. Describe the capture of Monterey. 448.

120. Describe the battle of Buena Vista. 449.

121. Describe the advance of our forces on Vera Cruz and the capital. 450-452.

122. When did the surrender of Mexico take place? 453.

123. What other movements were going on against Mexico? 454-456.

124. What parts of Mexico were ceded to the United States by the Treaty of Guadalupe Hidalgo? 457?

125. What was the effect of the gold discoveries in California? 458.

126. What was its effect on San Francisco and California generally? 459.

127. What was the "Wilmot Proviso?" 460.

128. What states were admitted to the Union during Polk's administration? 461.

129. Who was chosen as the twelfth President? What

question just then stirred up the old sectional strife? 462.

130. What was Clay's "Omnibus Bill" intended to accomplish? What was the result? 463.

131. How long did President Taylor serve before his death? Who became his successor? 464.

132. What was the "Gasden Purchase?" What did it cost? 465.

133. What three great public men died between the years 1850 and 1852? 466.

134. How was the "Fugitive Slave Law" regarded? 467.

135. What were the "Personal Liberty Laws?" Who was elected President in 1852? 468.

136. When was the Crystal Palace opened in this country? What was its influence? 469.

137. When was the treaty with Japan concluded? What has been its influence? 470.

138. What movement toward a Pacific Railroad was made about this time? 471.

139. What was the object of the Ostend Manifesto? 472.

140. Describe the Kansas-Nebraska Bill. 473.

141. What was the effect of this measure on Kansas? 474.

142. Describe the civil war that followed. 475.

143. On what basis was the Republican party now organized? Who was elected fifteenth President of the United States? 476.

144. What states were admitted to the Union in the early part of this new administration? What was the decision of the Supreme Court in regard to the Missouri Compromise? 477.

145. Describe John Brown's expedition. 478.

146. Who were nominated to the Presidency by the Democratic party? 479.

147. Who was elected President? 480.

148. Why did the Southern States adopt secession? 481.

149. For what was the "Star of the West" sent to Charleston harbor? 482.

150. When and by whom was the government of the Confederate States organized? 483.

151. What preparation had been made by the Confederate leaders in Washington? 484.

152. What Southern forts were still held by the United States? 485.

#### PART V.—THE CIVIL WAR.

1. What made the burden borne by the President peculiarly heavy at this time? 486.

2. What declaration did Lincoln make in his inaugural? 487.

3. What miscalculations were made, both by the North and the South? 488.

4. Describe the bombardment of fort Sumter. 489.

5. What was the effect of this attack? 490.

6. Whence did regiments hasten for the defense of the National Capital? What occurred at Baltimore? 491.

7. Where, at first, were the principal scenes of the war? 492.

8. Describe the battle of Bull Run. 493 and 494.

9. What was the effect of this battle on both sides? Who was made commander-in-chief of the forces of the United States? 495.

10. What was the condition of the navy when the war commenced? What, soon afterwards? 496.

11. What was the effect of the blockade? 497.

12. What success had Captain Semmes and the Sumter? What finally became of that vessel and the Alabama? 498.

13. Describe the "Trent" affair. 499 and 500.

14. What was the state of things before the end of 1861? 501.

15. What three objects were aimed at by the Union generals? What Confederate general was trusted to prevent their accomplishment? 502.

16. Describe the capture of forts Henry and Donelson. 503 and 504.

17. Who was placed in command of the military department of Western Tennessee? What great battle was now fought and with what result? 505-507.

18. Describe the warlike movements on the Mississippi and in Missouri. 508.

19. What double movement was now undertaken by the Confederates? 509.

20. Describe the Confederate campaign in Kentucky and its effect on the people. 510 and 511.

21. What national victories were gained at Iuka, Corinth, and Murfreesborough? 512 and 513.

22. Describe the defenses and capture of New Orleans. 514 and 515.

23. What account can you give of the destruction inflicted by the Merrimac, and by what means was she driven away? What became of her? 516-519.

24. What difficulties were met hindering the movement toward Richmond by the Union forces? 520-522.

25. How would you describe the battle of Fair Oaks? 523.

26. By whom, on each side, was the second battle of Bull Run fought, and with what result? 524.

27. Describe Lee's expedition into Maryland. 525.

28. How did the battle of Antietam result? 526.

29. Describe the battle of Fredericksburg. 527.

30. What were the general results of the year to the National cause? 528.

31. What led to the president's Emancipation Proclamation? When was it issued? What were its terms? When did it go into effect, and what were its immediate results? 529-531.

32. Describe the battle of Chancellorsville. 532.
33. What caused the New York riots? How long did they last, and who were the principal sufferers? 533.
34. What was the object of Lee's invasion of the North? What great battle ensued, and with what result? 534-536.
35. Describe the siege and surrender of Vicksburg. 537 and 538.
36. What ended the war on the Mississippi? 539.
37. Describe Morgan's raid. 540.
38. Describe Chattanooga and the siege thereof by General Bragg. 541-543.
39. Describe the battles of Lookout Mountain and Missionary Ridge. 544-546.
40. Who came to the relief of Knoxville? 547.
41. Who made a raid on Meridian, and with what result? 548.
42. Who was now made Lieutenant-general? 549.
43. When, where, and by whom were the battles of the Wilderness fought? 550 and 551.
44. What did Sheridan accomplish? 552.
45. How and by whom was Washington threatened? Who defeated Early at Cedar Creek? 553.
46. What disaster occurred at Petersburg? 554.
47. What were the principal details of Sherman's campaign in Georgia? 555-557.
48. Describe Sherman's march to the sea and its consequences. 558 and 559.
49. How and by whom was Mobile Bay captured? 560.
50. What important resolution was passed by Congress in relation to slavery? 561.
51. What was done by Sherman in South Carolina? 562.
52. What was done by Sherman in North Carolina? 563.
53. What was General Lee's last effort to maintain the Confederate cause? 564.



54. Describe the capture of Richmond, and the burning of the city. 565 and 566.

55. Describe Lee's retreat and surrender. 567.

56. What became of President Davis? 568.

57. Give the substance of President Lincoln's statement of the positions of the two parties in the Civil War. 569.

58. What day was appointed and observed as a day of thanksgiving for the close of the war? What befell President Lincoln? Who was the murderer? What befell Secretary Seward at the same time? What became of Booth and his associates? 570 and 571.

59. Who became President in consequence of Lincoln's death? 572.

60. From what was the State of Nevada formed, and what can you say of its mines? 573.

61. How did the selfishness of some show itself at the close of the war? 574.

62. What was naturally inferred as to the patriotism of the people and the strength of the Government from the war and its results? 575.

63. What was the result of disbanding our armies, and sending home such multitudes of men? 576.

64. What was the state of the National debt at the close of the war? 577.

65. How did the war affect the public credit? 578.

66. What was the basis of the Confederate paper? 579.

67. What was the probable loss of life during the war on both sides? 580.

68. What was gained by the war? 581 and 582.

69. How did it affect the Southern people? 583.

70. What was the effect of the war on science, and how was science used in aid of the war? 584.

71. What offices did the Sanitary and Christian Commissions fill in behalf of the army? 585 and 586.

72. What were the foreign results of the war? 587 and 588.

PART VI.—THE UNION RESTORED.

1. What conflict of opinion between the President and Congress concerning the seceded States arose? What was the result? 589.

2. Why was the President impeached? What was the result? 590.

3. What did the seceded states adopt before they were admitted to representation in Congress? 591.

4. How was the year 1866 particularly signalized? 592 and 593.

5. What purchase of territory was made from Russia, and at what cost? 594.

6. What embassy was sent to this country from China? What were its object and result? 595.

7. Who was the eighteenth President of the United States? 596.

8. Describe the completion of the Pacific Railroad. 597.

9. When was the restoration of the South to all her abandoned rights secured, and the Fifteenth Amendment to the Constitution proclaimed? 598.

10. How was the question in regard to unsettled war claims determined? 599.

11. How were the Alabama Claims settled? 600.

12. How was the boundary between Washington Territory and British Columbia fixed? 601.

13. How were those arising out of the fisheries settled? 601.

14. Describe the Chicago fire. 602.

15. Describe the Boston fire. 603.

16. What were the main features of Horace Greeley's career? 604.

17. What was the President's policy for the benefit of the Indians? 605.

18. What were the course and conduct of the Modoc Indians? 606.

19. What was now the financial state of things? 607.
20. What caused the money panic of 1873, and what was the result? 608, 609.
21. Describe the "Ring" robbers of New York. 610.
22. When did the Specie Resumption Act of 1876 go into operation? 611.
23. How was the Centennial year celebrated? 612.
24. What terrible disaster befell General Custer and his regiment? 614.
25. How was the dispute in reference to the Presidency of 1876 finally settled? 615, 616.
26. What was President Hayes's policy in regard to the troops in the Southern States? 617.
27. What was his policy in respect to Civil Service Reform? 618.
28. What led to the organization of the "Grangers?" 619.
29. What led to the railway riots of 1877? What, to those of San Francisco? 620, 621.
30. How did communism show itself in these riots? 622.
31. What difficulties are involved in the Chinese question? 623.
32. What was done by Congress to obviate these difficulties? Why did those measures fail? 624.
33. How did the Chinese government show its confidence in our institutions? 625.
34. How is the war debt being gradually paid? 626.
35. For what was President Hayes's four years' term chiefly remarkable? 627.
36. Who was the twentieth President? What can you say of his administration? 627, 628.
37. Name the twenty-first President of the U. S. 629.
38. Describe the various "Centennials." 630, 631.
39. What is the Red Cross Society? 632.
40. How are we connected with Mexico and Central America? 633.
41. Why was a reduction of taxes recommended? 634.

42. What floods occurred in 1883-4? 635.
43. Describe the Presidential election of 1884. 636.
44. What is said of the New Orleans Exposition? 637.
45. What is the extent of the United States? 638.
46. What progress has been made in our means for communication? 639.
47. What is said of Immigration? 640, 641.
48. Describe the most important manufactures and inventions. 642-647.
49. What is the value of the Signal Service? 648.
50. What progress has been made in education? 649-651.
51. Name some American literateurs. 652.
52. How was the Smithsonian Institution founded? 653.
53. How has the study of Artic Phenomena been advanced? 654.

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## ALGEBRA.

The references in the following questions on Algebra all point to RAY'S NEW ELEMENTARY ALGEBRA.

1. What are the object and advantages of studying algebra? See preface, pp. iii. and iv.
2. How are quantities represented in algebra? Art. 1.
3. How would you define *quantity*? Art. 1-6.
4. Define number, both abstract and concrete. Art. 9 and 10.
5. What two kinds of questions are considered in algebra? Art. 12-14.
6. What are known and unknown quantities, and how are they represented, respectively? Art. 16 and 17.
7. Give the principal signs used in algebra, and illustrate by examples their use and import. Art. 18-23.

8. What are numeral and literal co-efficients? Art. 30-32.
9. Explain the powers of quantities. Art. 33 and 34.
10. What is the root of a quantity, and by what sign is it indicated? Art. 35-38.
11. Explain exponents. Art. 33.
12. What is an algebraic expression? Art. 39.
13. Define a monomial, a polynomial, a binomial, a trinomial, and a residual quantity. Art. 40-43.
14. What is the numerical value of an algebraic expression? Art. 44 and 45.
15. Define the terms *dimension*, *degree*, and *homogeneous* as used in Algebra. Art. 46 and 47.
16. How are similar or like quantities distinguished from unlike quantities? Art. 50.
17. What is the reciprocal of a quantity? Art. 51.
18. Find the numerical value of  $\frac{2ax^2}{(a-x)^2} - 6x\sqrt{a}$  on the supposition that  $a=4$  and  $x=2$ . Art. 52, Ex. 11.
19. Express the following in algebraic symbols: Five  $a$  squared into  $a$  plus  $b$  into  $c$  minus  $d$ , minus three times  $x$  fourth power. Art. 52, Ex. 9, P. 16.
20. Define addition in algebra. Art. 53.
21. What is the rule for addition where the quantities have like signs? Art. 53.
22. When the quantities to be added are alike, but have unlike signs, what is the rule? Art. 54.
23. Add  $-7ax$ ,  $3ax$ ,  $6ax$ , and  $-ax$ . Art. 54, Ex. 7.
24. Reduce  $3ab+5c-7ab+8c+8ab-14c-2ab+c$  to their simplest form. Art. 54, Ex. 12.
25. What is the rule when the quantities to be added are unlike, or partly like and partly unlike? Art. 55.
26. Add together  $2c(a^2-b^2)$ ,  $-3c(a^2-b^2)$ ,  $6c(a^2-b^2)$ , and  $-4c(a^2-b^2)$ . Art. 55, Ex. 5, P. 22.
27. Define subtraction in algebra, and give the names of the quantities used in the operation. Art. 56.

28. What is the rule for finding the difference between two positive, *similar* quantities? Art. 56.

29. What is the rule when the two quantities are *not similar*? Art. 57.

30. From  $x+y+z$  take  $x-y-z$ . Art. 58, Ex. 19.

31. Give the general rule applicable in all cases. Art. 58, R. 1 and 2.

32. From  $x^3-11xyz+3a$  take  $-6xyz+7-2a-5xyz$ . Art. 58, Ex. 37, P. 26.

33. What makes a material difference between the operations of addition and subtraction in algebra and in arithmetic? Art. 60 and 61.

34. Can you explain that difference? Art. 61-64.

35. Define multiplication in algebra, and give the names of the quantities used in the operation. Art. 65.

36. What is the rule for multiplying a literal quantity by a number? Art. 66.

37. How would you demonstrate that the product of two factors is the same whichever is made multiplier? Art. 67.

38. What rule applies to co-efficients? Art. 68.

39. What rule regulates the multiplication of exponents? Art. 69.

40. Multiply  $7xy^2z$  by  $8x^2yz$ . Art. 69, Ex. 13, P. 33?

41. How do you multiply a polynomial by a monomial? Art. 70, R.

42. Multiply  $ab+ax+xy$  by  $abxy$ . Art. 70, Ex. 8.

43. Give the rule for multiplying one polynomial by another. Art. 71, R.

44. Multiply  $a^2+ab+b^2$  by  $a+b$ . Art. 71, Ex. 13.

45. How do the signs plus and minus affect the product? Art. 72.

46. Give the general rule applicable. Art. 72, General Rule for the signs, 1, 2, 3.

47. Multiply  $3a^2+5ax-2x^2$  by  $2a-x$ . P. 38, Ex. 22.

48. Multiply together  $(n^2+n+1)(n^2+n+1)(n-1)(n-1)$ . P. 38, Ex. 30.

49. What is division in algebra? Art. 73.
50. In how many ways may division be indicated? Art. 74.
51. Divide  $12a^3b^2c$  by  $4ab^2$ . Art. 74, Ex. 9.
52. How are the signs regulated in division? Art. 75.
53. How is one monomial divided by another? Art. 75, R.
54. Divide  $-28ac^2x^3y^4v^2$  by  $14ax^5y^4$ . Art. 75, Ex. 17.
55. When is it impossible to divide one monomial by another? Art. 76.
56. What is done in such cases? Art. 76.
57. How do you divide a polynomial by a monomial? Art. 78.
58. Divide  $12a^2bc - 9acx^2 + 6ab^2c$  by  $-3ac$ . Art. 78, Ex. 7.
59. Give the rule for dividing one polynomial by another. Art. 79.
60. Divide  $x^3 - y^3 + 3xy^2 - 3x^2y$  by  $x - y$ . Art. 79, Ex. 17.
61.  $(3a^4 - 8a^2b^2 + 3a^2c^2 + 5b^4 - 3b^2c^2) \div (a^2 - b^2) = \text{what?}$  Art. 79, Ex. 23.
62. From what are the *algebraic theorems* derived? Give Theorem I, and illustrate it by three examples. Art. 80.
63. Give Theorems II, III, IV, V, VI, VII, and VIII, and illustrate each by two examples. Art. 81-86.
64. Define a divisor, a prime number, and a composite number. Art. 87 and 88.
65. Resolve 4290 into its prime factors, and give the rule. Art. 88, Ex. 3.
66. Resolve  $35abc^2x$  into its prime factors, and give the rule. Art. 92.
67. Separate the polynomial  $6ax^2y + 9bxy^2 - 12cx^2y$  into factors, and give the rule. Art. 93, Ex. 5.
68. Resolve  $(x^4 - b^4)$  into its simplest factors. Art. 94, Ex. 8.
69. Separate the trinomial  $x^2 - 13x + 40$  into two binomial factors. Art. 95, Ex. 6.
70. Multiply  $x^2 - 5x + 6$  by  $x^2 - 7x + 12$ , and divide the *quotient* by  $x^2 - 6x + 9$  by factoring. Art. 96, Ex. 4.

71. What is the difference between a common divisor and the greatest common divisor of two or more quantities? Art. 97 and 98.

72. Find the greatest common divisor of  $8ax^2y^4z^5$ ,  $12x^5z^4$  and  $24a^3x^3z^2$ . Art. 100, Ex. 5.

73. Give the three propositions intimately related to the method of finding the G. C. D. of two polynomials. Art. 101.

74. Find the G. C. D. of  $x^2+2x-3$ , and  $x^2+5x+6$ , and give the rule. Art. 106, Ex. 8.

75. Define a multiple of a quantity; also, a common multiple and the least common multiple of two or more quantities. Art. 107-109.

76. Give the rule for finding the L. C. M. of two or more quantities. Art. 111.

77. Find the L. C. M. of  $12a^2x^2$ ,  $6a^3$ , and  $8x^4y^2$ . Art. 112, Ex. 2.

78. Define an algebraic fraction, an entire algebraic quantity, a mixed quantity, an improper algebraic fraction, a simple fraction, a compound fraction, and a complex fraction. Art. 113-119.

79. Give the six propositions bearing on the value of fractions. Art. 122-127.

80. Reduce  $\frac{5a^2b+5ab^2}{5abc+5abd}$  to its lowest terms. Art. 128, Ex. 7.

81. Divide  $3m^2+3n^2$  by  $15m^2+15n^2$ , reducing the quotient to its lowest terms. Art. 129, Ex. 3.

82. How do you reduce a fraction to an entire or mixed quantity? Art. 130.

83. What are the method and rule for reducing mixed quantities to the form of a fraction? Art. 131.

84. How do the signs plus and minus affect the value of fractions? Art. 132.

85. Reduce  $z-1+\frac{1-z}{1+z}$  to an improper fraction. Art. 132, Ex. 8.



86. What is the rule for reducing fractions of different denominators to equivalent fractions having a common denominator? Art. 133.

87. Reduce  $\frac{2x}{3y}$ ,  $\frac{3x}{5z}$ , and  $a$  to fractions having a common denominator. Art. 133, Ex. 6.

88. Give the method of reducing fractions to the *least* common denominator., Art. 134.

89. Reduce  $\frac{x+y}{x-y}$ ,  $\frac{x-y}{x+y}$ , and  $\frac{x^2+y^2}{x^2-y^2}$  to equivalent fractions having the least common denominator. Art. 134, Ex. 4.

90. What is the method of reducing an entire quantity to the form of a fraction having a given denominator? Art. 135.

91. Give the method of converting a fraction to an equivalent one having a given denominator. Art. 136.

92. Give the rule for adding and subtracting fractions. Art. 137 and 138.

93. Add  $2x$ ,  $3x + \frac{3z}{5}$ , and  $x + \frac{2z}{9}$  together. P. 80, Ex. 13.

94. From  $\frac{1}{a-b}$  take  $\frac{1}{a+b}$ . P. 80, Ex. 9.

95. Multiply  $a^2 - b^2$  by  $\frac{3c-a}{2a}$ . Art. 139, Ex. 4.

96. Multiply  $\frac{3(a+x)}{2}$  by  $\frac{4x}{a+x}$ . Art. 140, Ex. 3.

97. Divide  $\frac{x-y}{x^2-xy+y^2}$  by  $x+y$ . Art. 141, Ex. 10.

98. Divide  $\frac{a}{a^2-1}$  by  $\frac{a+1}{a-1}$ . Art. 142, Ex. 11.

99.  $a + \frac{1}{c}$   
 $m$  = what simple fraction? Art. 143, Ex. 3.

100. How are infinite series produced? Art. 144.

101. What is the infinite series resulting from  $\frac{1}{1+x}$  by division? Art. 144, Ex. 2.

102. Describe an equation, a simple equation, a quadratic equation, an identical equation, a numerical equation, and a literal equation. Art. 145-149.

103. What are the terms and root of an equation? Art. 150 and 151.

104. On what important principle are the rules for finding the value of the unknown quantity founded, and in what six axioms is that principle usually expressed? Art. 152.

105. What two operations are in constant use in the solution of equations, and how would you explain them? Art. 153 and 154.

106. Clear the following equation of fractions:  $x - \frac{x-3}{2} = 5 - \frac{x+4}{3}$ . Art. 154, Ex. 5.

107. In how many ways may the unknown quantity be connected with known quantities? Art. 155.

108. Solve the following equations:  $\frac{x+7}{3} - 5\frac{3}{4} = \frac{2x+5}{7} + \frac{10-5x}{8}$ ; and  $\frac{x}{a} + \frac{x}{b} + \frac{x}{c} = d$ . Art. 155, Ex. 18 and 27.

109. On what two parts does the successful solution of a problem mainly depend? Art. 156.

110. Four towns are situated in the order of the letters A, B, C, D. From A to D is 120 miles; from A to B is to the distance from B to C as 3 to 5; and one-third of the distance from A to B, added to the distance from B to C, is three times the distance from C to D; how far are the towns apart? Art. 156, Ex. 31.

111. Bought a chaise, horse, and harness for \$245; the horse cost three times as much as the harness, and the chaise \$19 less than two and two-third times as much as

both horse and harness; what was the cost of each? Art. 156, Ex. 51.

112. For every ten sheep I keep, I plow an acre of land, and allow one acre of pasture for every four sheep, how many sheep can I keep on 161 acres? Art. 156, Ex. 64.

113. How do you solve an equation involving two or more unknown quantities? Art. 157.

114. Define elimination, and describe its three methods. Art. 157.

115. Solve the following by substitution:  $\frac{2x}{3} + \frac{3y}{4} = 26$ ;

$\frac{2x}{7} - \frac{3y}{8} = 0$ . Art. 158, Ex. 6.

116. Solve the following by comparison:  $\frac{x}{5} + \frac{y}{2} = 14$ ;

$\frac{x}{9} - \frac{y}{5} = 3$ . Art. 159, Ex. 5. Also, by addition and sub-

traction:  $\frac{x}{4} + \frac{y}{5} = 8$ ;  $\frac{x}{5} + \frac{y}{3} = 9$ . Art. 160, Ex. 5.

117. A son said to his father, "How old are we?" The father replied: "Six years ago my age was  $3\frac{1}{2}$  times yours, but three years hence my age will be only  $2\frac{1}{6}$  times yours." Required their ages. Art. 161, Ex. 24.

118. The weights of two loaded wagons were in the ratio of 4 to 5; parts of their loads, which were in the ratio of 6 to 7, being taken out, their weights were in the ratio of 2 to 3, and the sum of their weights was then 10 tons; what were their weights at first? Art. 161, Ex. 33.

119. How are equations involving three or more unknown quantities solved? Art. 162.

120. A number expressed by three figures, when divided by the sum of the figures, plus 9, gives a quotient of 19; the middle figure equals half the sum of the first and third; and if 198 be added to the number, we obtain a number with the same figures in an inverted order, what is the number? Art. 163, Ex. 13.

121. A, B, and C killed 96 birds, which they wish to share equally; to do this, A, who has the most, gives to B and C as many as they already had; next, B gives to A and C as many as they had after the first division; lastly, C gives to A and B as many as they both had after the second division, and each had then the same number; how many had each at first? Art. 163, Ex. 15.

122. What is a formula, and how are formulas obtained? Art. 164.

123. Give an example illustrating the different formulas obtained by generalization. Art. 165-170.

124. Show, by solving example 5, article 171, how the second or some higher power of the unknown quantity may be made to disappear.

125. What are negative solutions of problems and what do they indicate? Art. 172.

126. What do you understand by the *discussion* of a problem? Art. 173.

127. Define an independent equation. Art. 174.

128. Define an indeterminate equation. Art. 175.

129. What follows when there are more equations than unknown quantities? Art. 176.

130. What do you understand by powers, roots, and exponents? Art. 178.

131. How is a monomial raised to any given power? Art. 179.

132. What law regulates the signs of the powers? Art. 180.

133. What is the 5th power of  $-3a^2xy^2z^3$ ? Art. 180, Ex. 15.

134. Give the method of raising a polynomial to any power, and illustrate by giving the cube of  $2x-1$ . Art. 181, Ex. 7.

135. How do you raise a fraction to any given power? Art. 182.

136. What is the Binomial Theorem? Art. 183.

137. What four distinct laws are to be considered in its use, and what facts do they develop? Art. 184.

138. What is the 6th power of  $x-z$ ? Art. 184, Ex. 4.

139. How may this theorem be applied when one or both terms consist of two or more factors? Art. 185.

140. How may it be used to raise a trinomial or a quadrinomial to any power? Art. 186.

141. Define evolution. Art. 187.

142. What law regulates the number of places in the square root of quantities? Art. 188.

143. Give the rule for the extraction of the square root of whole numbers. Art. 189.

144. Also for the square root of fractions. Art. 191.

145. What are perfect and imperfect squares? Art. 192.

146. What is the method of finding approximate square roots? Art. 193.

147. Find the square root of 27 to within  $\frac{1}{80}$ . Art. 193, Ex. 3.

148. Find the square root of 10 to six places of decimals. Art. 193, Ex. 7.

149. Find the square root of  $\frac{7}{15}$  to within  $\frac{1}{15}$ . Art. 194, Ex. 3.

150. Find the square root of 10.76 to six places of decimals. Art. 194, Ex. 6.

151. Find the square root of  $5\frac{8}{9}$ . Art. 194, Ex. 11.

152. How do you extract the square root of a monomial? Art. 195.

153. Describe imaginary quantities, and show what they indicate. Art. 195.

154. Find the square root of  $49a^2b^4c^8$ . Art. 195, Ex. 4.

155. What is the method of finding the square root of polynomials? Art. 196.

156. Find the square root of  $9y^4-12y^3+34y^2-20y+25$ . Art. 196, Ex. 7.

157. What useful suggestions are there under Art. 197?

158. What are radicals of the second degree? Art. 198.

159. In what does the reduction of radicals consist?  
Art. 199.

160. Give the rule for the same. Art. 199.

161. Reduce  $7\sqrt{28a^5c^2}$  and  $\sqrt{48a^8b^6c^4}$  to their simplest forms. Art. 199, Ex. 5 and 8.

162. How are fractional radicals reduced to their simplest forms? Reduce in this manner  $9\sqrt{\frac{1}{2}}\frac{6}{7}$  and  $10\sqrt{\frac{3}{5}}\frac{8}{9}$ . Art. 199, Ex. 15 and 17.

163. What is the method of adding radicals of the second degree? Art. 200.

164. Add  $\sqrt{28a^2b^2}$  and  $\sqrt{112a^2b^2}$ . Art. 200, Ex. 7.

165. What is the difference between  $5a\sqrt{27}$  and  $3a\sqrt{48}$ ?  
Art. 201, Ex. 7.

166. Multiply  $\sqrt{a^3b^5c}$  by  $\sqrt{abc}$ . Art. 202, Ex. 8.

167. Find the product of  $\sqrt{x+2}$  by  $\sqrt{x-2}$ . Art. 202, Ex. 12.

168. What is the rule for the division of radicals of the second degree? Art. 203.

169. Divide  $ab\sqrt{a^3b^3}$  by  $b\sqrt{ab}$ . Art. 203, Ex. 6.

170. Divide  $\frac{2}{3}\sqrt{18}$  by  $\frac{1}{2}\sqrt{2}$ . Art. 203, Ex. 9.

171. What is your method of reducing a fraction whose denominator contains a radical to an equivalent fraction having a rational denominator? Art. 204.

172. Find the value of  $x$  in the equation  $\sqrt{x+7}=6-\sqrt{x-5}$ . Art. 205, Ex. 7.

173. Find  $x$  in  $\sqrt{x}+\sqrt{ax}=a-1$ . Art. 205, Ex. 19.

174. Define a quadratic equation. Art. 206.

175. How would you classify such equations? Art. 207.

176. What is an affected quadratic equation, and what, a pure? Art. 207.

177. What is the rule for solving a pure quadratic equation? Art. 209.

178. Find the value of  $x$  in  $ax^2-b=(a-b)x^2+c$ . Art. 210, Ex. 6.

179. Find two numbers in the ratio of  $\frac{1}{2}$  to  $\frac{2}{3}$ , the sum of whose squares is 225. Art. 211, Ex. 11.

180. Give the rule for solving affected quadratic equations. Art. 212.

181. Find the value of  $x$  in the following equation:  
 $\frac{x+3}{x} + \frac{7x}{x+3} = \frac{23}{4}$ ; also, in  $2bx^2 + (a-2b)x = a$ . Art. 212, Ex. 32 and 37.

182. State the Hindoo method of solving quadratics. Art. 213.

183. By this method find the value of the unknown quantity in  $\frac{1}{3}x^2 + \frac{3x}{8} - 5 = 9\frac{1}{4}$ . Art. 213, Ex. 6.

184. A young lady being asked her age, answered: "If you add the square root of my age to  $\frac{3}{8}$  of my age, the sum will be 10." What was her age? Art. 214, Ex. 19.

185. What are the properties of the roots of an affected quadratic equation? Art. 215-218.

186. What is the method of solving quadratic equations containing two unknown quantities? Art. 219.

187. Find two numbers the sum of whose squares exceeds twice their product by 4, and the difference of whose squares exceeds half their product by 4. P. 214, Ex. 11.

188. Define arithmetical progression. Art. 221. How do you find any term of an arithmetical series? Art. 222.

189. If  $a = 2\frac{1}{2}$  and  $d = \frac{1}{3}$ , what will be the 100th term? Art. 222, Ex. 5.

190. How do you find the sum of an arithmetical series? Art. 223 and rules.

191. Find the sum of such a series whose first term is 3, common difference 2, and number of terms 21. Art. 223, Ex. 4.

192. The first and last terms of an arithmetical series being 2 and 29, and the common difference 3, find the number of terms and the sum of the series. Art. 225, Ex. 5.

193. The first term of a decreasing arithmetical series being 10, the number of terms 10, and the sum of the series 85, find the last term and the common difference. Art. 225, Ex. 7.

194. A sets out 3 hours and 20 minutes before B, and travels at the rate of 6 miles an hour; in how many hours will B overtake A if he travels 5 miles the first hour, 6 the second, 7 the third, and so on? Art. 225, Ex. 12.

195. Define geometrical progression. Art. 226.

196. How do you find the last and any term of a geometrical series? Art. 227.

197. A man bought 9 horses, agreeing to pay for the whole what the last would cost, at \$2 for the first, \$6 for the second, etc.; what was the average price of each? Art. 227, Ex. 7.

198. Give the rule for finding the *sum* of a geometrical series. Art. 228.

199. Find the sum of 7 terms of the progression 1, 2, 4, etc. Art. 228, Ex. 2.

200. How do you find the sum of an infinite decreasing series? Art. 229.

201. The first and last terms of a geometrical series are 2 and 162, and the number of terms 5, what is the ratio? Art. 230, Ex. 4.

202. What is ratio? Art. 231 and 232.

203. To what are the terms antecedent and consequent applied? Art. 233.

204. In what ways is ratio expressed? Art. 234.

205. In what kinds of numbers may ratios be expressed? Art. 235.

206. What follows from the fact that the ratio of two numbers is often expressed in the form of a fraction? Art. 236.

207. When the two numbers compared are equal, what is the ratio called? What, when the second is greater or less than the first? Art. 237.

208. What is a compound ratio? Art. 238.



209. Define proportion, and show in what ways it is written and read. Art. 240.

210. What are the terms of a proportion, and how are they distinguished? Art. 241.

211. Which of the quantities are antecedents and which consequents? Art. 242.

212. Give and illustrate Proposition I. Art. 244.

213. Give and demonstrate Proposition II. Art. 245.

214. What is Proposition III? Art. 246.

215. Describe and apply Proposition IV. Art. 247.

216. What truth is asserted by Proposition V? Art. 248.

217. Demonstrate Proposition VI. Art. 249.

218. What is the meaning of *composition* in Proposition VII? Art. 250.

219. Demonstrate Proposition VIII. Art. 251.

220. Demonstrate Proposition IX. Art. 252.

221. Illustrate, by suitable examples, Proposition X. Art. 253.

222. Make clear the truth of Proposition XI? Art. 254.

223. What do you understand by Proposition XII? Art. 255.

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## PHYSIOLOGY.

The following questions are arranged in numbered paragraphs. The answers are in the correspondingly numbered Articles of the *ECLECTIC PHYSIOLOGY*, by Eli F. Brown, M. D.

1. What are bodies? Into what two classes may they be divided? Give examples of each.

2. How do non-living bodies grow? How do living bodies grow? In what important particulars do the two kinds of bodies differ?

3. What are organs? Do plants possess organs? Name *several organs* and describe their uses.

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4. Into what classes are living things divided? Show the differences between them. What differences between the lower and higher animals? Which is the most highly developed animal?

5. Describe the human body.

6. Name the chief systems of organs of the human body.

7. What are the parts of the body?

8. What can you say of self-study?

9. What advantages may be derived from the study of Physiology?

10. What are the bones? What do they form?

11. Describe four distinct uses of the skeleton.

12. How many bones are usually recognized by anatomists in the human body? Into what great groups are the bones divided?

13. How are the bones of the head divided? Give the number of bones of the skull. Describe them. Describe the sutures and tell their uses. How many bones are there in the face? Describe their location and formation.

14. Into what groups are the bones of the body divided? Describe the spinal column.

15. Describe the sternum.

16. How many ribs in the human body? Describe their shape and position.

17. Of what is the pelvis composed? Where is it situated?

18. How is the shoulder formed? What and where is the humerus? What two bones unite to form the elbow? What is the radius? What enables a person to turn his hand back and forth? How many and what bones are in the wrist? How many and what bones are in the palm of the hand? How many and what bones are in the fingers and thumb of one hand?

19. Describe the femur; the bones of the lower leg. How many tarsal bones are there, and where are they situated? Describe and locate the metatarsal bones. What bones form the toes?

20. Describe the composition of the bones, and tell the results of some experiments in them.

21. Describe the structure of the bones. Describe the periosteum.

22. What can you say of the minute structure of bones as developed by the microscope?

23. What is a joint? Name the different kinds of joints, and give examples of each. How are movable joints classified? How are the bones of movable joints separated? For what purpose? Describe the synovial membrane. What is its use? To what is the great strength of joints due?

24. How are joints often injured? What is said in regard to sprains? When a bone is dislocated, how is it returned to its place?

25. Describe the growth and constant change in bones.

26. How is a broken bone repaired?

27. How is the healthfulness of bones affected?

28. How are the motions of the body produced? Describe the appearance of the muscles. What two actions have they? What other use have the muscles besides imparting motion?

29. Describe the structure and the action of the muscles. How are the muscles attached to the bones?

30. Describe the location and action of the biceps muscle.

31. Where are the muscles that close and open the hand? How may you feel the action of those muscles?

32. What is said of the weight of the muscles? What is said of their number? Describe their arrangement. What two classes of muscles are there? What can you say of the various shapes of muscles? What two classes of muscles are there as connected with the will? Give examples of both classes.

33. What is said of the necessity of exercise and rest? What change occurs during sleep? What effect has change of employment? What division of time is recommended? Which muscles are the strongest? Why? What happens *if an arm be bound motionless to the body for a length of*

time? What is the proper way to exercise the muscles? In what way only is skill in using the muscles attained?

34. Describe the uses of the skin.

35. What can you say of the structure of the skin? Where is the cuticle the thickest? Has the cuticle feeling?

36. How may the hair and nails be considered? Describe the growth of the nails. Of what use are they? How is the hair formed? Describe the structure of a hair. What gives the hair its color? How is it nourished?

37. Describe the structure of the cutis, or true skin.

38. Where are the sebaceous glands of the skin situated? What purpose do they serve? Where are the perspiratory glands? Of what use are they? Of what does perspiration consist?

39. How does perspiration affect the temperature of the body? Describe the process.

40. Describe the absorbing power of the skin. What results from this? How does the condition of the skin affect the health?

41. Why should the underwear be changed frequently? Why should the bedding be aired?

42. How does the skin become unclean? What is said in regard to the bath?

43. How should burns be treated?

44. Name the three parts of a tooth and describe each. Where do the nerves and blood-vessels enter a tooth? To what portion of the tooth are they confined? How are the teeth held so firmly in their places? What prevents jarring when we bite hard food?

45. How many sets of teeth does a human being have? How many temporary teeth are there? When does the second set commence to appear? How many teeth are there in this set? How do they differ from the first teeth?

46. What care should be given to the teeth? What can you say of the enamel of the teeth? What other uses have the teeth besides assisting us to eat?

47. What is food? Why does the body require food? From what is food obtained? What furnish the most nourishing food?

48. What mineral substances serve as food?

49. What three classes of organic substances are used as food? Describe each class, and tell its particular uses in nourishing the body. What is the best form of diet?

50. What is the proper drink? What proportion of various substances of the body is water? Is food or drink the more necessary to life? How should impure water be treated before use? What are the frequent results of using impure water? Is milk drink or food? What can you say of the use of tea and coffee?

51. Name some alcoholic drinks. Does alcohol assuage thirst? Does it satisfy hunger? What is its action on the nerves and muscles? On the blood? What are the frequent results of its use as a beverage?

52. For what is cooking designed? What is said of different methods of cooking?

53. What does health require with reference to cooking? With regard to drink?

54. What is digestion?

55. Describe the alimentary canal. Where is the esophagus? What are the intestines?

56. Describe the process of mastication. What is the effect of drinking large quantities of liquid while eating?

57. Describe the stomach. What takes place when food enters the stomach? What is the gastric juice, and how does it act on the food? How does digestion take place in the stomach? What becomes of the food that is not digested in the stomach?

58. Describe the small intestine. How do the coats of the intestines differ from those of other parts of the alimentary canal? What is the duodenum? What part of the digestive action takes place here? How does the action of the bile and pancreatic juice differ from the gastric juices? What

effect do they produce on the food? What length of time is usually required for the complete digestion of food?

59. How does the intestinal absorption of food take place?

60. What is the action of the lacteals? Describe the thoracic duct.

62. What should be the manner of eating so as to aid proper digestion?

63. What affects the amount of food necessary to support life?

64. What can you say as to the frequency and the time of meals? Why should we not work hard immediately before or after eating? How does the condition of the mind affect the digestion?

65. What is the effect of stimulants on the digestion?

66. What is circulation? What is the circulating fluid in plants? in animals?

67. Describe the general plan of circulation in the human body. What important changes occur in the blood during the process of circulation? What purposes does the blood fulfill by these changes?

68. Describe the qualities of the blood, its color, consistency, and odor. What part of the weight of the body does it constitute? What facts does the microscopic examination of the blood develop?

69. Describe the corpuscles.

70. Describe the plasma.

71. When blood is exposed to the air, what process takes place? How does this process act as a safeguard?

72. Name the organs of circulation. Describe the formation of the heart.

73. Tell how the passages of the heart are divided into sets, and describe the particular purpose of each set. What kind of valves, if any, have the first pair of openings? the second? the third?

74. Describe the action of the heart, telling from whence the blood comes into each auricle, and where it goes from

each ventricle. What is meant by the beating of the heart? How many times a minute does the heart beat under ordinary circumstances? How does the heart rest? How many hours a day is it idle?

75. Describe the arteries in general; the pulmonary artery; the aorta. Why does the blood flow through the arteries in jets?

76. What are the capillaries? What important action takes place in the capillaries? Do the corpuscles of the blood pass through the coats of the capillaries?

77. Where do the veins begin? Where is the pulmonary vein? How does the blood in this vein differ from that in all other veins? Why? How does the interior of a vein differ from that of an artery? How do the veins and arteries differ in location? in size? in shape? Does the blood not flow in jets through the veins? Why?

78. Trace a drop of blood in its circulation throughout the system.

79. What is pulmonary circulation? What is its effect on the blood?

80. What is systematic circulation?

81. What is assimilation? Are its processes fully understood? When does assimilation take place most rapidly?

82. How does the blood remove waste matter?

83. How does the serum that passes through the walls of the capillaries return to the veins? What are the lymphatics? Describe their action. What are the lacteals?

84. How does exercise, sunlight, and fresh air affect the circulation? By what means is the circulation commonly impeded? What action should be taken when blood-vessels are cut? In case of fainting?

85. What do all living things require in addition to food and drink? How do plants breathe? fishes? the higher animals? What is respiration?

86. What important offices are performed by the air that is taken into the blood?

87. State the general plan of respiration. How does the air get into the blood?

88. What is the air? Where does it exist? How is it made known to the senses? What are the principal components?

89. What proportion of oxygen is there in pure air? What use does it serve in the circulation?

90. What proportion of the air is nitrogen? Of what service is it?

91. What part of the atmosphere is carbonic acid gas? How is it produced? What is its purpose? In what way is it harmful to animal life?

92. What of the watery vapor of the atmosphere?

93. Name the organs of respiration.

94. Name the various air-passages.

95. Describe the trachea; the bronchial tubes; the air-cells. What can you say of the lining of the larynx and trachea? of the bronchial tubes?

96. Describe the formation and position of the lungs. What is the pleura? Where is it?

97. How are the movements of the chest in breathing produced? What is the diaphragm? Describe the action. How do the intercostal muscles act in breathing? Why do the expanded parts resume their former position when the air is expelled? Are the lungs ever entirely free from air? What is the ordinary capacity of inflated lungs? Explain how the air in the lungs undergoes a continuous change. Upon what does the frequency of respiration depend? How many respirations are there, usually, a minute?

98. Why is the air that comes from the lungs unfit to be breathed again? While in the lungs, what three substances are received by the air from the blood? How may the presence of these substances in the exhaled breath be shown? What changes are effected in the blood by respiration?

99. Describe the function of oxygen in the blood.

100. What can you say of the hygiene of respiration?



101. State the differences that usually exist between the outside atmosphere and that of dwellings. What is said of the organic impurities thrown off from the lungs and skin? State the necessity for good ventilation, and the means for effecting it.

102. What can you say of the manner of breathing? Which portion of the chest is naturally largest? What is the effect of tightly lacing this portion of the body? How are the lungs frequently injured? Give three features essential to correct breathing. Why is it not proper to breathe through the mouth?

103. How is the voice produced? Describe the larynx fully as to form, size, and position. What is the epiglottis? Tell its use.

104. Describe the form and position of the vocal cords.

105. Why is no sound made in ordinary breathing? What action takes place before a sound of the voice can be produced? What causes the sound? How are the sounds of the voice raised in pitch and quality? On what does loudness of tone depend? What governs articulation? On what does quality depend? How may vocal power be developed? Of what is a weak voice usually indicative? How may purity of tone, clearness of articulation, and the lung power be improved?

106. What two processes are continually going on in the human body? What is excretion?

107. How are impurities in the body chiefly produced? What are the principal ones? How does the blood clean the body?

108. Name the organs of excretion. How are their processes carried on?

109. Describe the location of the kidneys. What is their color? their size? What two kinds of vessels do they contain? Describe the course of the blood through the kidneys. What quantity of water and of urea do the kidneys remove *daily* from the blood of an average person? Of what do the

excretions of the lungs consist? What does the skin excrete? What do the kidneys excrete?

110. How are the excretory organs best kept in a healthy condition? What is the effect of imperfect excretion? What is said of diseases of the kidneys?

111. How are the organs of the body controlled in their work?

112. What is the character of the nervous tissue of the body? What facts does the microscopic examination of nervous tissue develop? How do the two kinds of matter differ in form? How do nerve-fibers differ in their connections? What seems to be their purpose? Describe and illustrate the complete action of nervous matter.

113. Into what two subdivisions is the general nervous system separated? What is the office of each?

114. Describe the cerebro-spinal system.

115. What is the chief nervous center? Where is it located? How is it connected with all parts of the body? Describe its shape, and give its weight. How is it protected? Describe the different membranes that cover it. What proportion of the blood does it require? Describe the conformation of the brain.

116. Give a description of the cerebrum. What seems to be its peculiar office?

117. Describe the form and position of the cerebellum. What is it designed to control?

118. Describe the medulla oblongata. What is said of its sensitiveness?

119. What is the spinal cord? Tell its form. Of what does it consist? What duty does it perform?

120. How many spinal nerves are there? Describe their formation. What office do the fibers that come from the rear of the cord perform? those from the front of the cord? Of what substance are the nerves? Describe the extent of each nerve-fiber. Describe the combined action of the two sets of fibers.

121. Describe the conformation and action of the sympathetic nervous system. Why is it called the sympathetic system? Do the centers of this system act independently of the brain? Illustrate.

122. State the function of nervous tissue. How are the various kinds of paralysis explained?

123. What is meant by reflex action? How is it conclusively shown that reflex action takes place without the cognizance of the brain? State the uses of reflex action. How are habits of mind and body related to reflex action?

124. Show the great importance of the health and vigor of the nervous system. Are all kinds of nervous disease hereditary? What forms of nervous weakness are notably apt to re-appear in succeeding generations? Mention the various causes of injury to the nervous system, stating the cause and result in each case. What can you say of the necessity of physical exercise as affecting the brain? Why is mental exercise also necessary? Mention several of the ordinary causes of insanity. Does the nervous system demand rest? How is the brain rested? How may partial rest be obtained?

125. State what takes place when alcohol enters the stomach. What effect has alcohol on the nerves? What is the first effect of alcohol on the general system? What follows the first effect? Why is alcohol termed a narcotic poison by all medical writers? State the first and secondary effects of alcohol on the mind. How does alcohol affect the character? Illustrate its effect on the will. Are the injurious effects of alcohol confined to the individual who indulges in its use? What can you say of alcohol as related to insanity? Describe the effects of tobacco on the various vital organs. What renders tea and coffee harmful? What is opium? How is it used as a stimulant? What is its use as a medicine? What can you say of its abuse? What are chloral hydrate and chloroform? What can you say of the sleep produced by narcotics?

126. Where is feeling actually produced? Where does

the mind locate feeling? Illustrate. On what does acute-ness of feeling in any part depend?

127. What is pain? How does pain protect us?

128. What can you say of the special senses? For what do they seem designed?

129. Name the special senses, and give the organs, or organ, of each. Are the uses of these organs interchangeable? Illustrate.

130. Is the cuticle the organ of touch? What are the special organs of touch? What special information does the mind acquire by their use? In what other ways do these organs serve us? Show their peculiar adaptation to such service.

131. Into what three parts is the skin divided with reference to the sense of touch? What and where are the papillæ? How may the sense of touch be cultivated? Illustrate.

132. How do the nerves of taste differ from those of touch? What chemical change in the object is necessary before it can be tasted? Do all objects have taste? Where are the nerves of taste principally located?

133. Describe the construction of the tongue. How may the sense of taste be deadened? Of what use is the sense of taste?

134. Describe the operations of the sense of smell. For what does the sense of smell seem specially designed? How does the sense of smell compare with that of touch and taste? Name some animals that have a wonderfully acute sense of smell.

135. What force in nature is necessary to sight? Of what use is sight?

136. Having two eyes, why do we not see two objects in place of one? Is it necessary to use both eyes in order to see? What advantage is gained from the position occupied by the eyes?

137. How are the eyes protected?

138. Where are the lachrymal glands? What office do they perform? Of what service are the tears? What happens when we cry? How are the tears kept from overflowing at ordinary times? Do the eyeballs fill the sockets? How are the eyes moved in the head?

139. Describe the construction of the eyeball. Describe the sclerotic coat, and tell its use. What is the choroid coat? What is its service? What is the iris? What is the pupil? How does the pupil act? What is the retina? With what three humors is the interior of the eyeball filled? Give the location of each. Locate the optic nerves.

140. Do the objects we see touch the nerves of sight? By what means are these nerves excited to action? Of what does the mind take cognizance—the actual object, or its image in the eye? What can you say of the size of the image in the eye? In what position is the image on the retina?

141. Explain what is meant by near-sightedness. How is it caused? How may it be remedied?

142. What is far-sightedness? How is it caused? How may it be remedied?

143. Mention a number of ways in which the eyes may be injured. In using the eyes continuously, as in sewing, reading, writing, etc., what care should be taken as to the light? How should the eyes be relieved when subjected to a severe strain? How may inflamed eyes be relieved? What action should be taken when any thing gets into the eye? How may the eyes be kept clean?

144. Describe the position and relation of the organs of hearing. How many distinct parts compose the ear? Describe the outer ear. Describe the canal which leads from the outer to the middle ear. What is the middle ear called? How is the middle ear separated from the outer and from the inner ear? Describe the ossicles of the ear. What is the eustachian tube? Of what use is the middle ear? Describe the inner ear. Which is the most important part of the ear?

145. How does the act of hearing take place?

146. What is sound? Illustrate the manner by which the mind recognizes sound.

147. What can you say of the liability of the ear to disease? Of what use is the wax of the outer ear? State a number of ways in which the hearing may be injured. What can you say of deafness?

148. State the effect of food upon the health. What is the effect of overeating? of too little food? State the different kinds of food appropriate to different circumstances. What foods should be avoided by all? What can you say of the manner and time of eating? How does the state of mind affect digestion? Give four simple rules for healthful eating.

149. What does the system demand more urgently than food? Can the healthfulness of pure water be improved by any additions to it to form a drink? Is one apt to drink too much water? What effect has the lack of sufficient water? State several kinds of water unfit for drinking. What diseases are frequently caused through drinking impure water? How may impure water be purified? Is it healthful to drink much at meals? State how coffee and tea affect the system injuriously. Name some appropriate and some inappropriate beverages.

150. Explain why cleanliness of person and of clothing is necessary to health. What is the best kind of clothing? How should the clothing be worn? Why should the extremities be particularly well clothed? What can you say of the clothing of children? Repeat the suggestions conducive to good health.

151. On what does the proper oxidation of the blood depend? What effect has tight clothing? Does the position of the body make any difference in the breathing? How is the air inside of a house vitiated? What effect has ventilation? Is a person who lives almost exclusively indoors usually robust? State the effects of breathing pure air and those

of breathing impure air. What suggestions can you give for securing the proper amount of pure air?

152. What effect have occupation and exercise upon the health? How does the idler differ in health, as a rule, from the worker? State some kinds of occupation that are not healthful. Why should all have something regular to do? Should a person be satisfied with performing manual labor only? How does recreation affect the health?

153. How are habits formed? Does the system naturally crave narcotics? What is the first effect of tobacco? To what does the constant use of narcotics reduce a person? What can you say about the formation of habits good and bad? How may a person rid himself of a bad habit?

154. Give a careful description of the proper condition of a sick-room, including lighting, ventilation, temperature, annoying noises, and the bed. What kind of food is suitable for an invalid? How should a nurse act? Who are the best nurses? What are the chief agents in the recovery of the sick? What care must be taken with convalescents? How should nurses protect themselves?

155. Enumerate as nearly as you can the general suggestions for maintaining good health.

156. What action should be taken when one is sick?

157. What is to be done in case of a serious accident?

158. If bones be broken, what should be done pending the arrival of the surgeon?

159. How should profuse bleeding be stopped? If the bleeding be moderate, what action is sufficient?

160. Describe the mode of procedure in case of burns and scalds.

161. How should one who has been nearly drowned be resuscitated?

162. What should be done in cases of apparent suffocation from foul air?

163. How shall a person who is unconscious from cold be treated?

164. What caution is necessary in feeding a person nearly starved?

165. How should cases of sunstroke be treated?

166. What action should be taken in case the clothing takes fire?

167. What should one do who is cut off from escape by the flames in a burning building?

168. How may choking sometimes be relieved?

169. What is the best treatment for diarrhea?

170. What are the remedies for the bite of a snake or of a mad dog?

171. What can you say of the danger of being poisoned? What is the first thing to be done in a case of poisoning? Describe the action of a few poisons, and give their antidotes.

172. What is alcohol? Describe the sources from which it is usually produced.

173. Describe the process of fermentation.

174. Describe the process of distillation.

175. Give the properties and uses of alcohol.

176. What is the natural drink? What part does it have in the nourishment of the system? If substances that have a great attraction for water be taken into the system, what is the effect? How do caustics affect the flesh? Name a few caustics. What effect do alcohol and salt have upon the body? If the strongest form of alcohol be taken into the mouth, what is the result? What effect do milder forms have? How does alcohol in any form differ from a natural drink in its effect? What is the effect of beer in allaying thirst? How are the tissues of the body affected by alcoholic beverages? How does their use affect digestion?

177. Show how a true food and alcohol are opposed in their action.

178. How is the body kept warm by food? What effect has alcohol on the temperature? Does the use of alcohol enable a man to withstand extreme cold or exposure?



179. How does alcohol affect the blood and the organs of circulation? Why is an alcohol drinker more liable to disease than other men?

180. Describe the relations existing between the nerves and the mind. How does alcohol affect the nerves and the brain?

181. Describe the effects of stimulants upon the system

182. What are narcotics? What effect do they have upon the system?

183. What can you say of alcohol as a stimulant?

184. What can you say of alcohol as a narcotic?

185. Describe the different stages of action of alcohol.

186. State the relations existing between the mind and the nervous system.

187. How does alcohol affect the mind?

188. Show how alcohol affects the whole mind.

189. How does alcohol affect the will?

190. How is the craving for alcohol created?

191. May the evil consequences of alcohol be transmitted?

192. What objections are there to a moderate use of alcohol?

193. Show that alcohol is frequently a cause of insanity.

194. How does alcohol pave the way for crime?

195. Give a summary of the evil effects of alcohol.

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## THE ART OF TEACHING.

The references are to the pages of OGDEN'S ART OF TEACHING, published by Van Antwerp, Bragg & Co., Cincinnati and New York.

1. What is education? See Webster's Dictionary.

2.. Of what importance is earnestness to a teacher, and how does it manifest itself? P. 10.

3. What place should be given to system by the teacher? Pp. 11 and 12.

4. What often leads to the want of system? P. 12.
5. How should the teacher enter the school-room to enter upon his duties? P. 13.
6. What preliminary exercises are proper for the opening? Pp. 14 and 15.
7. What are the advantages of this method? Pp. 15 and 16.
8. What should ordinarily follow reading the Scriptures, and what style of singing is especially commended? Pp. 16 and 17.
9. What reasons can be urged in favor of prayer as an opening exercise? Pp. 17 and 18.
10. What objection is sometimes urged against such opening exercises? How would you answer it? P. 18.
11. What do you understand by organization? P. 19.
12. Wherein consists its importance, and how is it to be accomplished? P. 19.
13. What is recommended as an important aid in this part of the work? P. 20.
14. What are the advantages of a thorough organization of the school at the outset? Pp. 21 and 22.
15. What is one great obstacle in the way of a thorough organization? Pp. 22-24.
16. What is the first step toward organization, and what is the best method of securing it? Pp. 24 and 25.
17. What is naturally the second step, and what is the best plan in effecting it? Pp. 25 and 26.
18. What will naturally follow enrollment and seating, and why is an examination and classification necessary? Pp. 27 and 28.
19. What is next to be done in organizing the school, and whence its importance, and how can the object sought thereby be best attained? Pp. 29 and 30.
20. How should lessons be assigned, and what must be the consequences of indefiniteness or carelessness in doing it? Pp. 30-35.

21. What assistance should the teacher give the class in assigning lessons? Pp. 35-40.

22. What are the chief obstacles in the way of successful study? Pp. 43-45.

23. What errors are prevalent in regard to the object of study? Pp. 45 and 46.

24. What is the true object of study, and what difficulties stand in the way of its attainment? Pp. 46-48.

25. What is the difference between instruction and education? P. 48.

26. Define acquisition as applied to teaching, and illustrate its use. Pp. 48 and 49.

27. What other end is sought by study, and wherein consists its importance and harmony with the other objects of study? Pp. 49-51.

28. What are some of the conditions of successful study? Pp. 51-53.

29. What requirements are often made by teachers that are unreasonable and wrong? Pp. 53-55.

30. Of what importance is silence in school, and how may it be secured? Pp. 55 and 56.

31. What relation do interest and attention bear to study? Pp. 57-59.

32. What is the bearing on study in school by abstraction, generalization, etc.? Pp. 60 and 61.

33. What are some of the helps which the teacher may use to fix the attention and teach the habit of consecutive thinking about the lesson while studying? Pp. 61-72.

34. How may narrative and description be used in school as a means of securing successful study? Pp. 72-76.

35. To what class of scholars are moral incentives to study to be addressed, and what appeals are apt to be the most successful? Pp. 76-81.

36. What shall be done with pupils upon whom all these artifices, conversations, and appeals fail to produce any good effect in the way of study? Pp. 82 and 83.

37. What is the comparative importance of recitation?  
P. 85.

38. From what extreme to what extreme have the modes of teaching gone in respect to recitation? Pp. 85 and 86.

39. What is the first object of recitation, and how will it be best secured? Pp. 87-89.

40. What is the second object of recitation, and how is this often defeated by the misapprehension of the teacher? Pp. 89 and 90.

41. What is the third object of recitation? Pp. 90 and 91.

42. What is the fourth object of recitation, and how can it be best secured? Pp. 91 and 92.

43. What conveniences are necessary, both for pupils and teachers, in order to effect successful recitation? Pp. 92-95.

44. What preparation should the teacher have? Pp. 95-98.

45. What sort of a voice is best for pupils and teachers in recitation? Pp. 98 and 99.

46. What faults do some teachers commit in the use of the voice? Pp. 99-102.

47. What quality of voice is especially desirable on the part of teachers? P. 102.

48. What faults in the use of language ought to be avoided in teaching? Pp. 102 and 103.

49. What should be the teacher's personal appearance? P. 104.

50. What two extremes are to be shunned by the teacher in recitation? Pp. 104-106.

51. What farther requisites are important in conducting recitations? Pp. 106-111.

52. What method of recitation is insisted upon? Pp. 111-118.

53. State and illustrate the need of definiteness and exactness in recitation on the part of the pupils. Pp. 118-121.

54. What is especially necessary in order to teach geography successfully? Pp. 122-124.

55. What two extremes are to be guarded against in recitation? Pp. 124 and 125.

56. What are the principal methods of prompting in recitation? What are the evils resulting therefrom, and how would you remedy them? Pp. 126-139.

57. What are the advantages and disadvantages of the concert method of recitation? Pp. 139-141.

58. What are the benefits of, and objections to, the consecutive method? Pp. 141 and 142.

59. What preferences has the promiscuous method? Pp. 142 and 143.

60. Describe the silent method of recitation and its advantages. Pp. 143-145.

61. What is the monitorial method, and how is it applied? Pp. 145 and 146.

62. What miscellaneous methods of recitation may be tried with advantage. Pp. 146-148.

63. Describe the topical method, its mode of application, and its advantages. Pp. 148-150.

64. What advantages has the lecturing method of recitation, and to what abuses is it subject? Pp. 150-152.

65. What relation does the school sustain to the duties of life? Pp. 155 and 156.

66. How should the school aid in establishing habits of neatness, cleanliness, and order among the pupils? Pp. 157-160.

67. How and in what manner may the school cultivate habits of promptness and punctuality? Pp. 160-163.

68. What aid should the school give in fitting the pupils for the duties and emergencies of life? Pp. 163-166.

69. What methods in conducting the school may be used as efficient helps in establishing promptness and punctuality in the pupils? Pp. 167-170.

70. What other requisites are necessary that the school may have its highest efficiency in forming right habits and good character? Pp. 170-177.

71. What place does recreation occupy in the school? What is its object, and how best secured? Pp. 179-186.

72. What are the requisites to suitable recreation? Pp. 187-194.

73. What sort of exercises are best adapted to recreation? Pp. 194-202.

74. Define school government. Pp. 205-207.

75. What principles are involved in the proper objects and means of school government? Pp. 207-217.

76. What should it attempt to do as a reformer? Pp. 217-223.

77. When is corporal punishment to be used, and when should it be avoided? Pp. 223-225.

78. What are the objections to its use? Pp. 226-228.

79. With what spirit must it always be administered? Pp. 228 and 229.

80. What three forces are available in school government, and how should they be applied? Pp. 229-239.

81. What should be the treatment of offenders when subdued and repentant? Pp. 239-241.

82. What qualities should the teacher possess in order to govern his school successfully? Pp. 241-245.

83. What moral qualities are especially requisite? Pp. 245-248.

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## SCIENCE OF EDUCATION.

The references are to the pages of *THE SCIENCE OF EDUCATION*, by John Ogden, A. M.

1. What three propositions may be assumed as lying at the foundation of the science of education? P. 11.

2. Illustrate the first. Pp. 11-13.

3. How would you establish the truth of the second? Pp. 13-15.

4. How would you demonstrate and apply the third? Pp. 15-20.

5. What two important inferences follow? Pp. 20-23.

6. What convenient classification of the whole subject is presented? Pp. 23 and 24.

7. When should religious training begin? Pp. 27-30.

8. Why should it begin thus early? Pp. 30 and 31.

9. What are some of the earliest developments of a physical capacity for education? Pp. 31-33.

10. How does the infantile intellectual capacity manifest itself? Pp. 34-36.

11. What is the degree of moral capacity possessed at this early period of life? Pp. 36 and 37.

12. What may be regarded as the transition period of life, and what are its characteristics? Pp. 37-39.

13. Describe the physical capacities of this period, and its consequent dangers. Pp. 39 and 40.

14. How do the intellectual powers manifest themselves, and what dangers are encountered? Pp. 40 and 41.

15. Describe the moral capacity for education and the proper means and method for its development and culture. Pp. 41-43.

16. What do you understand by the subjective period of life, and how would you describe its peculiar characteristics and capacities,—physical, intellectual, and moral? Pp. 43-46.

17. How would you define educational forces? Pp. 49-51.

18. What educational forces are naturally adapted to the objective or early period of life? Pp. 51-58.

19. What educational forces should be provided for the intellectual development of this period? Pp. 58-62.

20. What instruments does man's moral and religious culture now demand? Pp. 62-67.

21. Describe the transition period of life and the physical forces best adapted to meet its demands. Pp. 67-71.

22. What are the intellectual forces suitable to this period? Pp. 71-76.

23. What are the moral and religious forces adapted to this period? Pp. 76-80.

24. What are the physical, intellectual, and moral forces suited to the subjective or more advanced period of life? Pp. 80-84.

25. By what processes are the young to be educated physically? Pp. 87-91.

26. By what method is their intellectual culture to be secured? Pp. 91-94.

27. What mode is to be employed in securing the moral culture of children? Pp. 94-97.

28. When the scholars reach what is often called the transition period, what methods are best adapted to their physical education? Pp. 97-100.

29. What methods are best adapted to their intellectual advancement? Pp. 100 and 101.

30. What moral processes are suitable to this period? Pp. 101-106.

31. What physical processes are suitable for still more advanced life, often called the subjective period? Pp. 106-109.

32. By what method can intellectual progress be best secured at this period? Pp. 109-111.

33. In what way can moral advancement and culture be continued now? Pp. 111-115.

34. What relation does physical suffering sustain to physical education? Pp. 117 and 118.

35. By what argument can you show that the proper education of the physical powers should be coincident with the development of the mental faculties? Pp. 118-122.

36. How should the blackboard be used in the education of the hand? Pp. 122-128.

37. How should the slate be used for the same purpose? Pp. 129-131.

38. How may cards and blocks be made to subserve the same hand-culture? Pp. 132 and 133.



39. What may and should be done out of school (though in connection with it), in the way of excursions, to aid in physical education? Pp. 133-138.

40. How may the specimens gathered be made available in recitation? Pp. 138-140.

41. What manual and athletic exercises may be of great advantage in physical education, and how should they be applied? Pp. 140-145.

42. What class of exercises are peculiarly adapted to develop the vocal powers and the lungs? Pp. 145-152.

43. What relation does physical education bear to intellectual education? Pp. 155 and 156.

44. How would you classify and define the mental faculties? Pp. 156-159.

45. What exercises are best adapted to their development in school? Pp. 159-162.

46. What mode of instruction is best adapted to develop and strengthen the intellectual faculties of the younger pupils? Pp. 163-166.

47. What scientific facts may be used for the same purpose by the teacher, and how? Pp. 166-170.

48. How may the teacher use maxims, mottoes, sentiments, rhymes, and poems as aids to the mental culture of his pupils? Pp. 170-172.

49. Define investigation and generalization as intellectual processes, and show their adaptation to mental culture. Pp. 172 and 173.

50. What relation do the intellectual faculties sustain to the sciences, and what is their reciprocal influence on each other? Pp. 173-179.

51. What place should language, history, and kindred sciences occupy in mental development? Pp. 179 and 180.

52. What place should be assigned to metaphysics for the same purpose? Pp. 180 and 181.

53. On what does moral, social, and religious culture depend? Pp. 183-188.

54. Wherein consists its necessity? P. 188.

55. Define philanthropy, and show its bearing on moral culture. Pp. 188-195.

56. Define social culture and the best means of securing it. Pp. 195-202.

57. What creates the necessity for amusements in social culture? What and whence the dangers arising therefrom? Pp. 202-207.

58. What remedy should be applied? Pp. 207-210.

59. What is patriotism, and what is its place and mode of application in moral and religious culture? Pp. 210-212.

60. What is the true place of religion in moral culture, and how can it be made most effective in this direction? Pp. 212-221.

61. What place does conscience occupy in moral character and culture, and how can it best be educated? Pp. 221-224.

62. What are the moral duties inculcated by true religion? Pp. 225-228.

63. What is the office and influence of the will in forming and maintaining moral character? Pp. 228-230.

64. By what means are right motives and purposes maintained? Pp. 230 and 231.

65. What is the power of choice? How does it originate, and on what is it dependent? Pp. 231 and 232.

66. What are executive volitions, and how may the will be so educated as to secure their subjection to proper motives and actions? Pp. 232-234.



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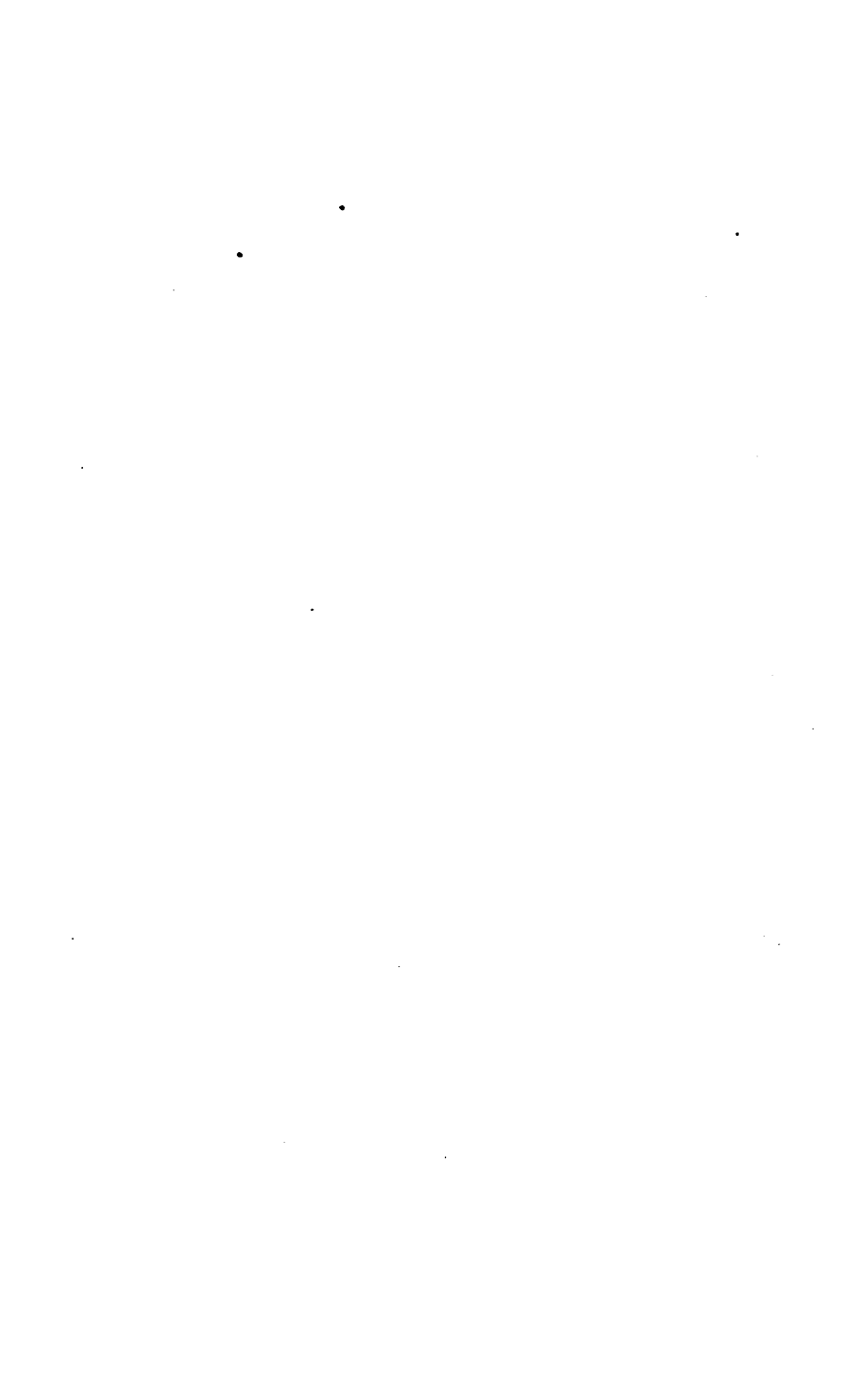
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